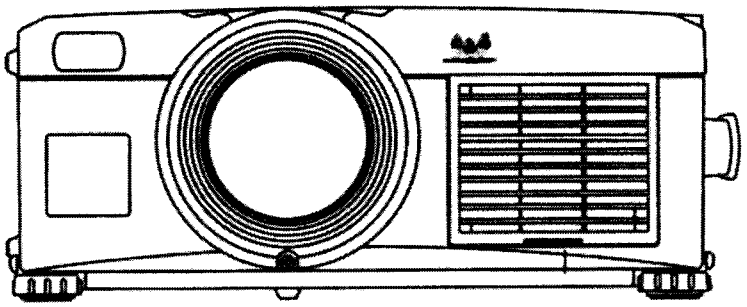
Service Manual

ViewSonic PJ860-2

Model No. VPRJ21558-1

Color SVGA Ultra Bright Portable LCD Projector



(Rev. 2 – February 2000)

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Revision History

Revision	Date	Description Of Changes	Approval
1.0	1/18/00	Initial Issue	T. Sears
2.0	2/18/00	Updated & Corrected Adjustment Procedure	T. Sears

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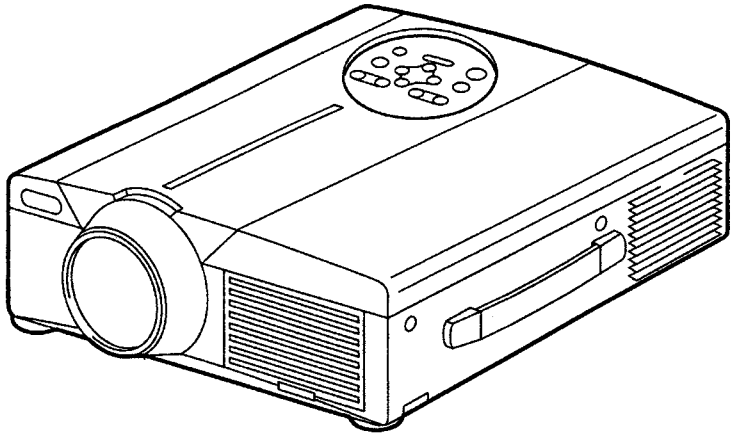
-MEMO-

ViewSonic Corporation

SERVICE MANUAL

PJ860-2



Caution

Be sure to read this manual before attempting to service this product. This ViewSonic liquid crystal projector is designed to provide protection from fire, electric shock, physical injury, harmful radiation, and materials. It is important to read and follow all cautionary warnings mentioned in this manual.

Service Warning

1. The lamp can be extremely HOT. Be careful to avoid burning your fingers when replacing the lamp.
2. Never touch the lamp bulb. Dropping it or giving it a shock may cause the lamp to burst.
3. High voltage is present in the projector for the lamp circuit, so do not touch the electrical parts of the power unit when the projector is powered on.
4. Do not touch the exhaust fan during operation.
5. The LCD module assembly is easily damaged. When replacing the LCD Module assembly, never handle the attached flexible ribbon cable.

SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT.

Liquid Crystal Projector

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1. Features

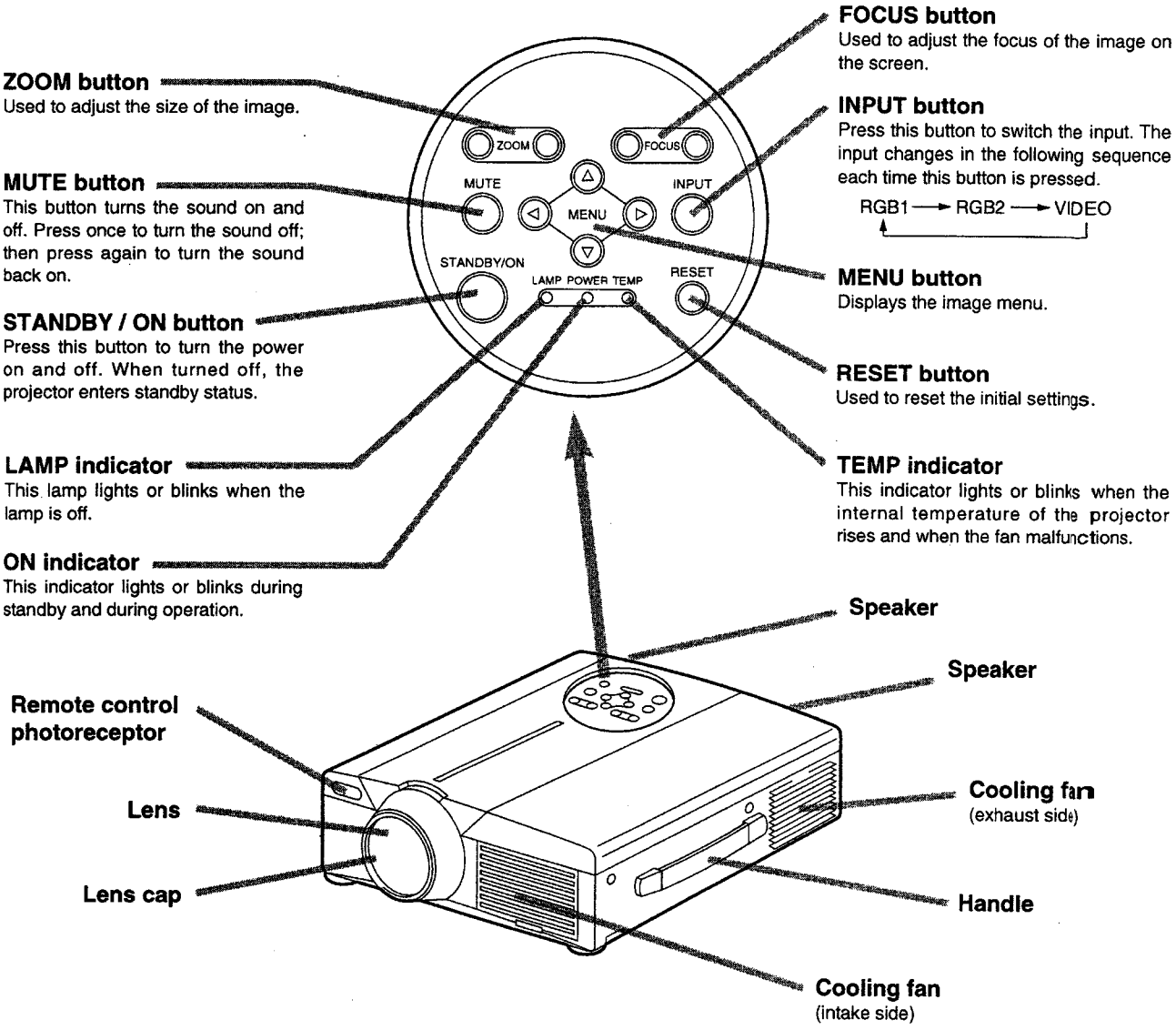
- High brightness, High resolution
- Compact size, light weight for portability
- RGB output terminal
- RS232C Communication
- Mouse emulation
- Power zoom and power focus functions
- Complies with VESA DDC1/2B specifications
- Auto-adjustment function

2. Specifications

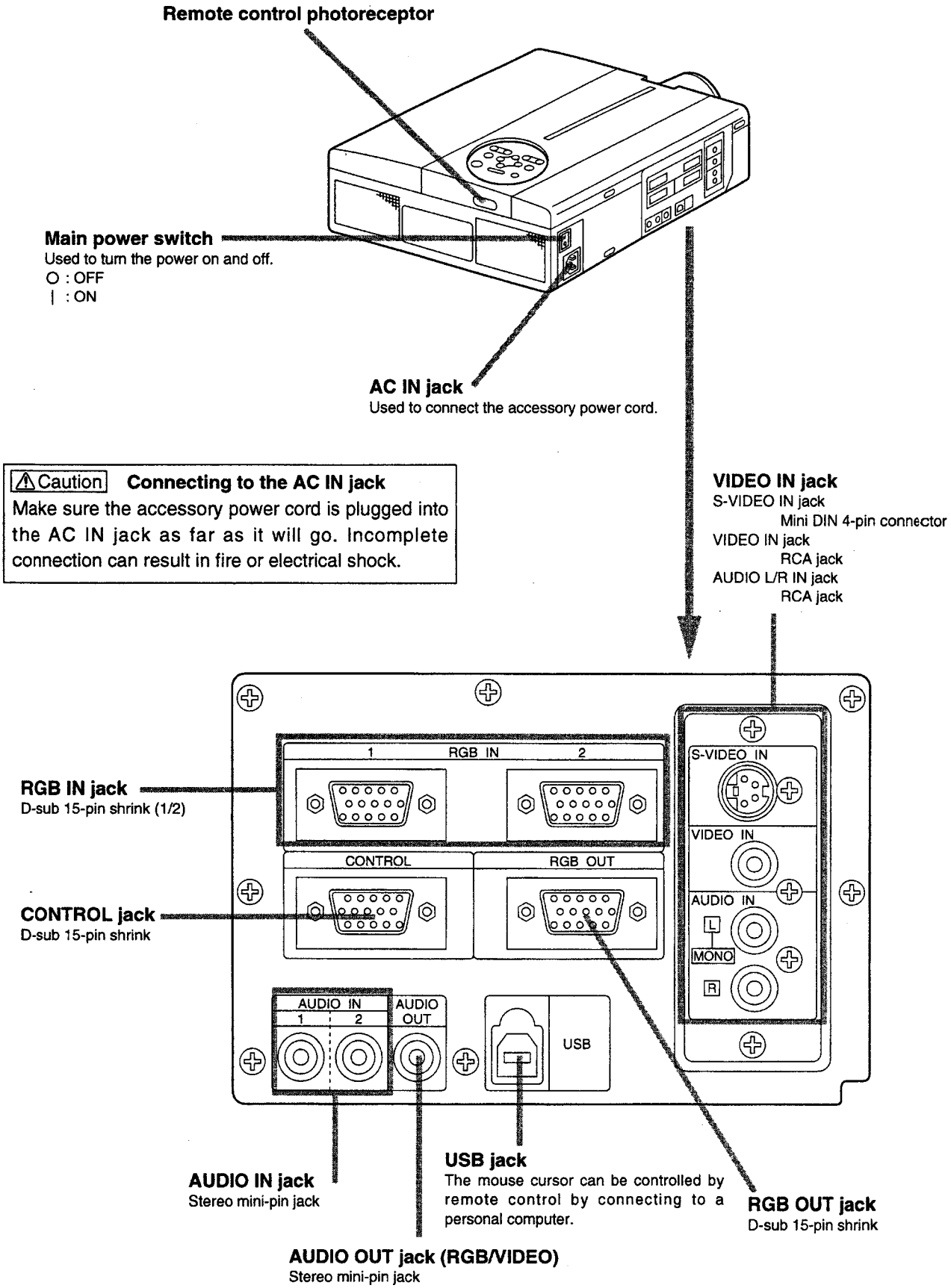
Liquid crystal panel	Drive system	TFT active matrix
	Panel size	1.3 inches
	Number of pixels	800 (H) x 600 (V)
Lamp		190W UHB
Video input	System	NTSC , 4.43NTSC , PAL , M-PAL , or SECAM (N-PAL : only compulsion mode)
	Level	Composite 1.0Vp-p (75Ω termination) Y/C Y : 1.0Vp-p (75Ω termination) C : 0.286Vp-p (NTSC burst signal, 75Ω termination) 0.3Vp-p (PAL/SECAM burst signal, 75Ω termination)
RGB input / output	Video signal	Analog RGB input 0.7Vp-p (75Ω termination)
	Sync signal	H/V separate TTL level
Audio	Input	200mVrms, 20kΩ or less
	Output	0~200mVrms, 1kΩ
Speaker output		1.2W + 1.2W (stereo)
Power supply		AC100~120V/3.7A,AC220~240V/1.5A
Power consumption		320W
Dimensions		289 (W) x 124 (H) x 345 (D) mm
Weight		5.9kg (13lbs)
Temperature range		Operation : 0~35°C Storage : -20~60°C
Accessories		Remote control ..... 1 POWER cord ..... 3(CP-S860W) 2(CP-S860E) BATTERIES LR6 ..... 2 RGB cable ..... 1 Mac adapter ..... 1 Video/Audio cable ..... 1 Mouse cable 3

3. Names of each part

● Main unit


ZOOM button
Used to adjust the size of the image.
MUTE button
This button turns the sound on and off. Press once to turn the sound off; then press again to turn the sound back on.
STANDBY / ON button
Press this button to turn the power on and off. When turned off, the projector enters standby status.
LAMP indicator
This lamp lights or blinks when the lamp is off.
ON indicator
This indicator lights or blinks during standby and during operation.
FOCUS button
Used to adjust the focus of the image on the screen.
INPUT button
Press this button to switch the input. The input changes in the following sequence each time this button is pressed.
RGB1 → RGB2 → VIDEO
MENU button
Displays the image menu.
RESET button
Used to reset the initial settings.
TEMP indicator
This indicator lights or blinks when the internal temperature of the projector rises and when the fan malfunctions.
ZOOM
FOCUS
MUTE
INPUT
MENU
STANDBY/ON
LAMP POWER TEMP
RESET
Speaker
Speaker
Remote control photoreceptor
Lens
Lens cap
Cooling fan
(exhaust side)
Handle
Cooling fan
(intake side)

• Use the remote control in front of the remote control photoreceptor at a distance of about 5 m or less and an angle of 30 degrees to the left or right of the center.



⚠Caution **Connecting to the AC IN jack**

Make sure the accessory power cord is plugged into the AC IN jack as far as it will go. Incomplete connection can result in fire or electrical shock.

● Remote control transmitter

VIDEO, RGB button
Press to switch the input.

STANDBY / ON button
Used to turn the power on and off.
Press for 1 sec. or more to turn the power off (enter standby status).

DISK PAD
(1) Used to select menu items when the menu screen is displayed
(2) When the menu is not displayed, the mouse shift function and left click function are active.
(3) After the POSITION ON button has been pressed, the screen can be moved upward, downward and to the left and right.

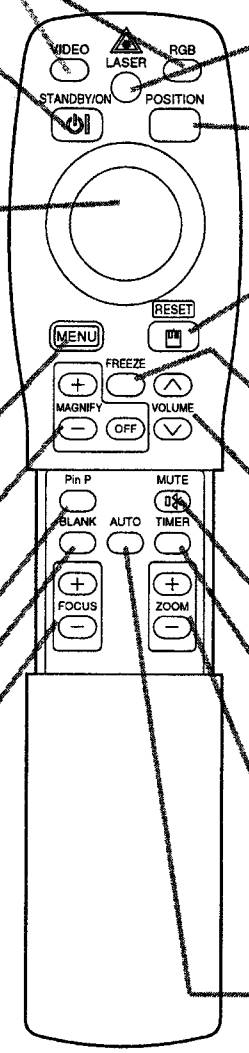
MENU button
Used to turn the menu screen display on and off.

MAGNIFY button
Used to magnify the displayed image.

Pin P button
Used to turn Pin P (Picture In Picture: displays small video signal images in the RGB signal) on and off.

BLANK button
Used to turn blanking on and off.

FOCUS button
Used to adjust the focus of the image on the screen.



LASER button
Turns the laser beam on and off.

POSITION button
Pressing the top, bottom, left or right of Disk Pad after pressing this button causes corresponding movement (effective only for RGB signal output).

RESET MOUSE / RIGHT button
Operates as the RESET button when the menu is displayed. Press this button to return to the initial settings.
Used to click the right mouse button when the menu is not displayed.

FREEZE button
Used to turn the freeze (still) image display on and off.

VOLUME button
Adjusts the volume of the sound. Press [∧] to increase the volume and (∨) to decrease the volume.

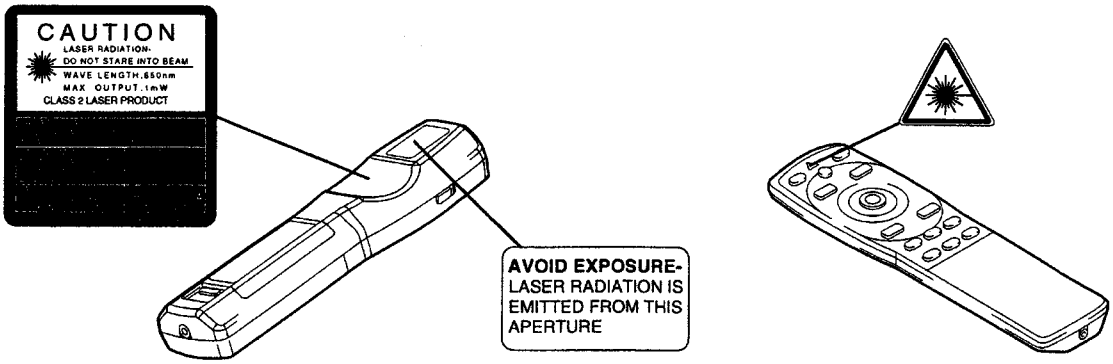
MUTE button
Mutes the sound when pressed and restores the sound when pressed again.

TIMER button
Turns the time display of the timer displayed on the menu screen on and off.
The timer is not displayed during blanking.

ZOOM button
Used to adjust the size of the image.

AUTO button
Used to execute auto-adjust.

⚠ Warning
The laser pointer of the remote control is used in place of a finger or rod.
Never look directly into the laser beam outlet or point the laser beam at other people.
The laser beam can cause vision problems.



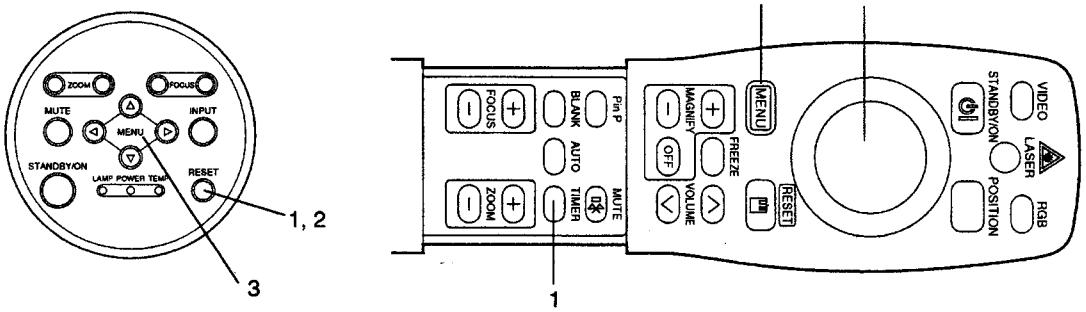
Function for service

Function	Operation
Displayed the operating time of the lamp	Press the RESET button of the projector or the TIMER button of the remote control, for 3 seconds.
Reset the operating time of the lamp	Press the RESET button of the projector or the remote control MENU, for 3 seconds. (During be displayed the operating time of the lamp.)
Displayed the operating time of the projector	Press the MUTE button of the projector or the remote control, for 3 seconds. (During be displayed the operating time of the lamp.)

When replacing the lamp, Reset the operating time of lamp.

Reset the lamp timer :

Please carry out the following operation within 10 minutes from power on, if you replaced the lamp after 2,000 hours.



1) Press the RESET button on projector for 3 seconds or remote control TIMER button for 3 seconds and display the total lamp used time.
2) Press the RESET button on projector or remote control MENU ON button during displaying the lamp used time.
3) Select the "0" on the screen using the MENU (◀) button or DISK PAD.

LAMP 1700 hr

LAMP 1700 □→0 ■CANCEL

Message table

On-screen display

The following messages are displayed on the screen.

"CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER"	Lamp has 1,700 hours on it and may need to be changed.
"CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER" "THE POWER WILL TURN OFF AFTER 20 Hr."	Lamp has 1,979 hours on it. See P.6 "Reset the lamp timer"
Blinking of "CHANGE THE LAMP" "AFTER REPLACING LAMP, RESET THE LAMP TIMER" "THE POWER WILL TURN OFF AFTER 0 Hr."	When the lamp has 2,000 hours or more on it, the message will blink, and the power will turns off after 10 minutes.
"NO INPUT IS DETECTED"	Signal is not input.
"SYNC IS OUT OF RANGE"	The horizontal or vertical frequency of the input signal exceeds the range of the projector, it cannot be displayed.

Indicator display

The ON indicator, LAMP indicator and TEMP indicator will light or blink in the following cases.

ON indicator	LAMP indicator	TEMP indicator	Meaning	Remedy
Lights orange	Goes off	Goes off	Standby mode	————
Blinks green	Goes off	Goes off	During warming up	————
Lights green	Goes off	Goes off	During operation	————
Blinks orange	Goes off	Goes off	During cooling down	————
Lights red	Lights red	Goes off	Lamp cannot light	Cool projector by power off for 60 minutes. If the indicator is still lit, lamp may be defective. Replace.
Lights red	Blinks red	Goes off	Lamp is not inserted	Securely insert the lamp.
Lights red	Goes off	Blinks red	Cooling fan accidented	Replace fan.
Blinks red	Blinks red	Goes off	Accumulated lamp operation time has exceeded 2,000 hours	Replace lamp and reset the accumulated lamp operation time.

When inside temperature becomes high, to protect the projector, the lamp may be turned off and the lamp indicator lights red, or the projector will be shut down and the all indicator display goes off.

4. Adjustment (Timing should be set to 800 X 600 X 60Hz when performing the following adjustments)

4 - 1 Before adjusting

1. Before starting adjustment, warm up the projector for about 10 min.
2. Set Zoom Wide to Max. and project an image a distance of 40 inches.
3. Normalizing the video adjustment.
   (Press the MENU button of the remote controller to display the Video menu, then press the RESET button.)
4. Perform all adjustments from the Adjustment menu. Perform the following operations to display the Adjustment menu.
   a. Press the MENU button of the remote controller (the Video menu will appear).
   b. Next, press the RESET button for 5 sec. or more (the Adjustment menu will appear).

4 - 2 S/H timing adjustment

Adjustment preparations

1. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p cross hatch signal.
2. Use H.PHASE in the Video menu to adjust until the cross hatch vertical stripes are most clearly visible.
3. Reset S/H.
   Position the cursor on S/H in the Adjustment Menu and then press the RESET key.

Adjustment procedure

1. Use S/H - S/H Timing in the Adjustment menu to adjust until the cross hatch vertical stripes are most clearly visible.
2. Next, check whether or not vertical jitter is within the range of $-16 < A < +16$ at the value resulting from the adjustment in item 1.
3. If there is jitter, change S/H - S/H POL in the Adjustment menu (change NEGA to POSI and POSI to NEGA).
4. Finally, return S/H - S/H TIMING in the Adjustment menu to the value in item 1.

4 - 3 SUB POSITION adjustment

Adjustment preparations

1. Make this adjustment after completing the adjustment in "4-2 S/H Timing adjustment".
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p cross hatch signal.
3. Press the AUTO button of the remote controller.

Adjustment procedure

1. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p frame signal.
2. Use S/H - SUB POSITION in the Adjustment menu to adjust so that the left and right frames are displayed.

Caution: The frame is displayed in three steps at this stage, but adjust to the center step; otherwise, colors may appear in the vertical stripes in some cases.

Required adjustments after a part is replaced

Adjustment at replacement

Adjustment	Replaced part		
	Prism block	Drive PWB	Main PWB
S/H timing	x	Need	Need
Sub position	x	Need	Need
Ghost	Need	Need	Need
Flicker	Need	Need	Need
NRSH	Need	Need	Need
White balance	Need	Need	Need
Color uniformit	Need	Need	Need

4 - 4 Ghost adjustment

Adjustment preparations

1. Make this adjustment after completing the adjustment in "4-3 SUB POSITION adjustment".
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p cross hatch signal.
3. Use H.PHASE in the Video menu to adjust until the cross hatch vertical stripes are most clearly visible.

Adjustment procedure

1. Display the R primary color signal and then use S/H - GHOST-R: in the Adjustment menu to adjust so that R color ghost is at a minimum.
2. (If ghosts appear on the right side of the vertical stripes because the adjustment value is too large, return two steps.)
3. In the same way, display the G primary color signal and then use S/H - GHOST-G: in the Adjustment menu to adjust so that G color ghost is at a minimum.
4. In the same way, display the B primary color signal and then use S/H - GHOST B: in the Adjustment menu to adjust so that B color ghost is at a minimum.

4 - 5 Flicker adjustment (V.COM adjustment)

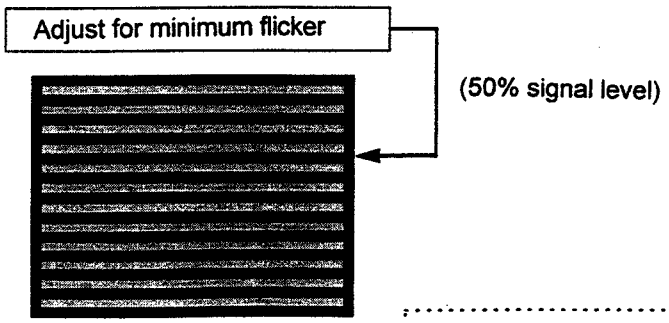
Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-4 Ghost adjustment.
2. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p R primary color signal for every other line.
3. Use DAC-P - V.COM - R: in the Adjustment menu to adjust until flicker is minimum.
4. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p G primary color signal for every other line.
5. Use DAC-P - V.COM - G: in the Adjustment menu to adjust until flicker is minimum.
6. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p B primary color signal for every other line.
7. Use DAC-P - V.COM - B: in the Adjustment menu to adjust until flicker is minimum.

4 - 6 NRSH adjustment (vertical streak adjustment)

Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-5 Flicker adjustment.
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p 16-step gray scale signal.
3. Use DAC-P - NRSH in the Adjustment menu to adjust until vertical streaks are minimum every 6 dots or every 12 dots.
   (This adjustment will change the flicker level so always adjust the flicker after making this adjustment.)
4. Then vertical streaks is still displayed, use S/H-S/H Timing in the Adjustment menu to adjust until vertical streaks are minimum.



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4 - 7 White balance adjustment

Adjustment procedure

1. Make this adjustment after completing the adjustment in 4-6 NRSH adjustment.
2. Use the SVGA VESA (60) timing signal to input a 0.7Vp-p 16-step G primary color signal.
3. Use DAC-P - SUB BRIGHT - G: and DAC-P - SUB CONTRAST - G: in the Adjustment menu to adjust to the optimum 16-step shading characteristics (visually).

   Adjustment hints:

   Lock DAC-P - SUB CONTRAST - G: at 30. Also lock DAC-P - BLACK2-GAIN - G: at 32.

   Use SUB BRIGHT - G: to adjust until the last two of the 16 steps on the bright side can no longer be distinguished and then return slightly.

   After adjusting, if contrast is thought to be insufficient, use DAC-P - SUB CONTRAST - G: to slightly increase the contrast and then readjust.

   To lower only the black level, adjust BLACK2-GAIN - G:.
4. Switch to a 0.21Vp-p white signal.
5. Use DAC-P - SUB BRIGHT - R: and DAC-P - SUB BRIGHT - B: in the Adjustment menu to adjust until the color coordinates in the center of the screen are as follows.

   X = 0.280 ±0.005, Y = 0.340 ±0.01 (low brightness white balance).
6. Switch to a 0.52Vp-p white signal.
7. Use DAC-P - SUB BRIGHT - R: and DAC-P - SUB CONTRAST - B: in the Adjustment menu to adjust until the color coordinates in the center of the screen are as follows.

   X = 0.280 ±0.005, Y = 0.345 ±0.01 (low brightness white balance).
8. Repeat the operations described in items (4) - (7) and adjust the low brightness and medium brightness white balance.
9. Next, switch to a 0.07Vp-p white signal.
10. Use DAC-P - BLACK2 GAIN - R: and DAC-P - BLACK2 GAIN - B: in the Adjustment menu to adjust until the color coordinates in the center of the screen are as follows.

    X = 0.270 ±0.03, Y = 0.320 ±0.03 (black white balance).

Note:

Use the Minolta CL-100, Color Differential Meter for measurements and adjustments.

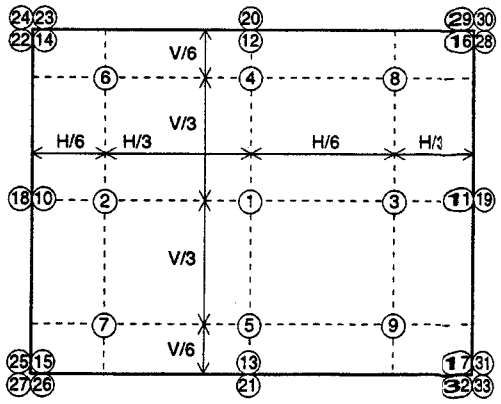
4 - 8 Color uniformity adjustment

Adjustment preparations

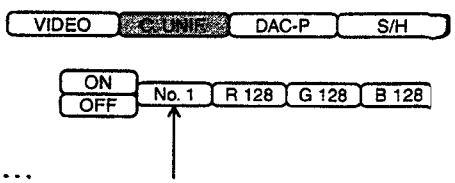
1. Make this adjustment after completing the adjustment in 4-7 "White balance adjustment".
2. Reset color uniformity correction.

   Position the cursor on C.UNIF in the Adjustment Menu and then press the RESET key for each color.
3. This adjustment is used to assure color uniformity over the entire screen by adjusting in sequence the white balance of each of the 33 points shown in the diagram below, starting with the smallest signal.
4. Do not adjust adjustment point No. 1 because, as with DAC-P - SUB BRIGHT in the Adjustment Menu, the brightness of the entire screen will be changed.
5. Basically, only adjustment points No. 2 and No. 3 can be adjusted for the color green (G).

Representative adjustment points



Adjustment Menu



Representative adjustment points No.

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Adjustment procedure

1. Use the SVGA VESA (60) timing signal to input a 0.35Vp-p G primary color signal.
2. Measure the illumination at adjustment points No. 2 and No. 3.
   The values should be:
   No. 2 = Y2 [lux]
   No. 3 = Y3 [lux]
3. Determine which of the No. 2 or No. 3 adjustment point has the higher illumination and then adjust it to match the one with the lower illumination.
   For example, if Y2 > Y3, adjust No. 2 G: to set the No. 2 illumination as follows.
   $Y2 = Y3 \pm 10$ [lx]
   This completes the G color adjustment.
4. Next, use the SVGA VESA (60) timing signal to input a 0.35Vp-p G white signal.
5. Measure and make a note of the color coordinates of adjustment point No. 1.
   The values should be: x = x1, y = y1

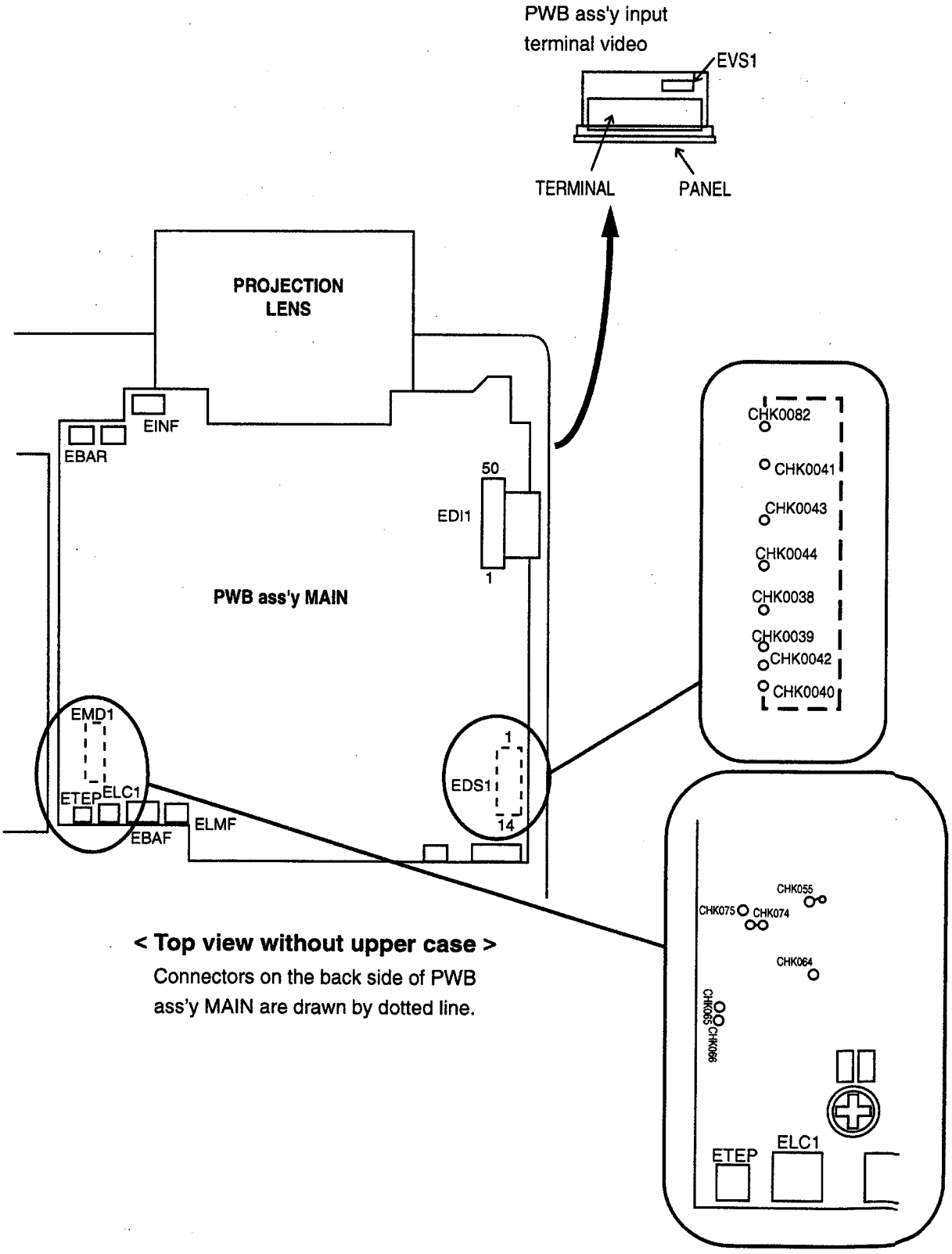
Note:

When using the CL-100 (Color Differential Meter), it is convenient to use the Delta mode. After measuring the color coordinates of adjustment point No. 1, hold down the [F] button on the front and set the slide switch on the side to [Δ] Delta. After that, the differences from adjustment point No. 1 will be displayed as the measurement values.

6. Next, measure the color coordinates of adjustment point No. 2, and then adjust No. 2 A: and B: until the color coordinates are as follows.
   $x = x1 \pm 0.01$, $y = y1 \pm 0.01$ (ANSI point color uniformity)
7. Measure and adjust the color coordinates of adjustment points No. 3 - No. 9 in sequence in the same way, starting with the smallest signal.
8. Next, measure the color coordinates of adjustment point No. 10, and then adjust No. 10 A: and B: until the color coordinates are as follows.
   $x = x1 \pm 0.01$, $y = y1 \pm 0.02$ (corner color uniformity)
9. Measure and adjust the color coordinates of adjustment points No. 11 - No. 17 in sequence in the same way, starting with the smallest signal.
10. This completes the normal color uniformity adjustment. Adjust visually if local lack of color uniformity still remains around the periphery of the screen.
11. If there is local lack of color uniformity around the periphery of the screen, adjust the color coordinates of adjustment point No. 18 - No. 21 outside the worst side of the screen.
12. If there is local lack of color uniformity in the corners of the screen, adjust the color coordinates of adjustment point No. 22 - No. 33 outside the worst corner of the screen.

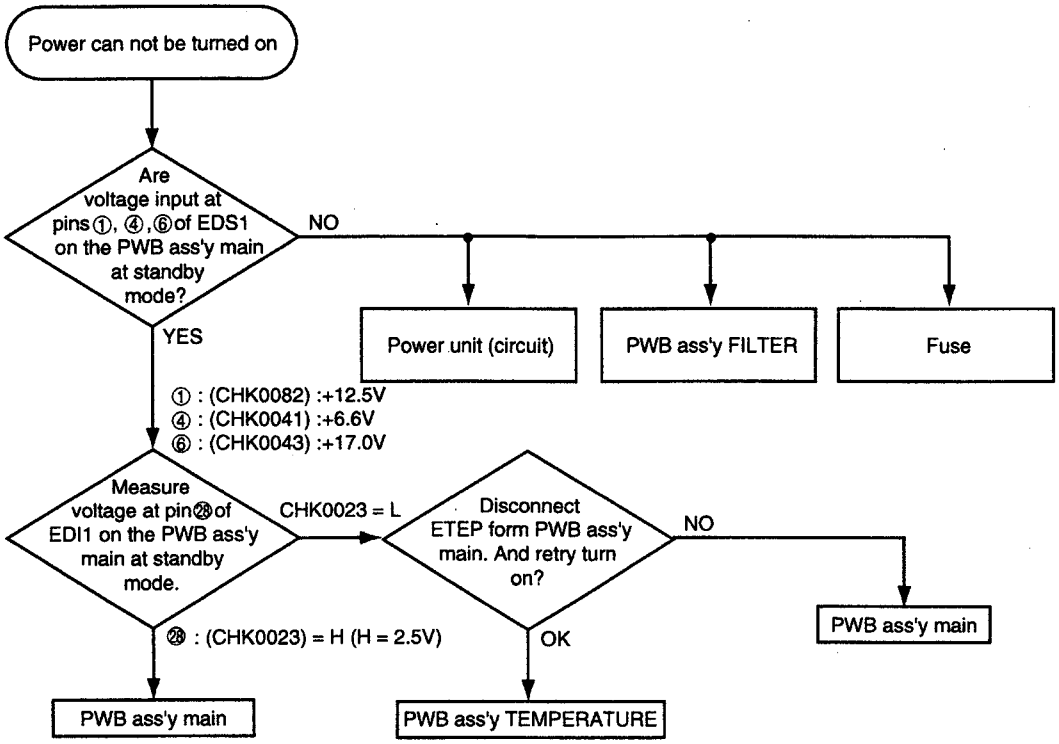
5. Troubleshooting

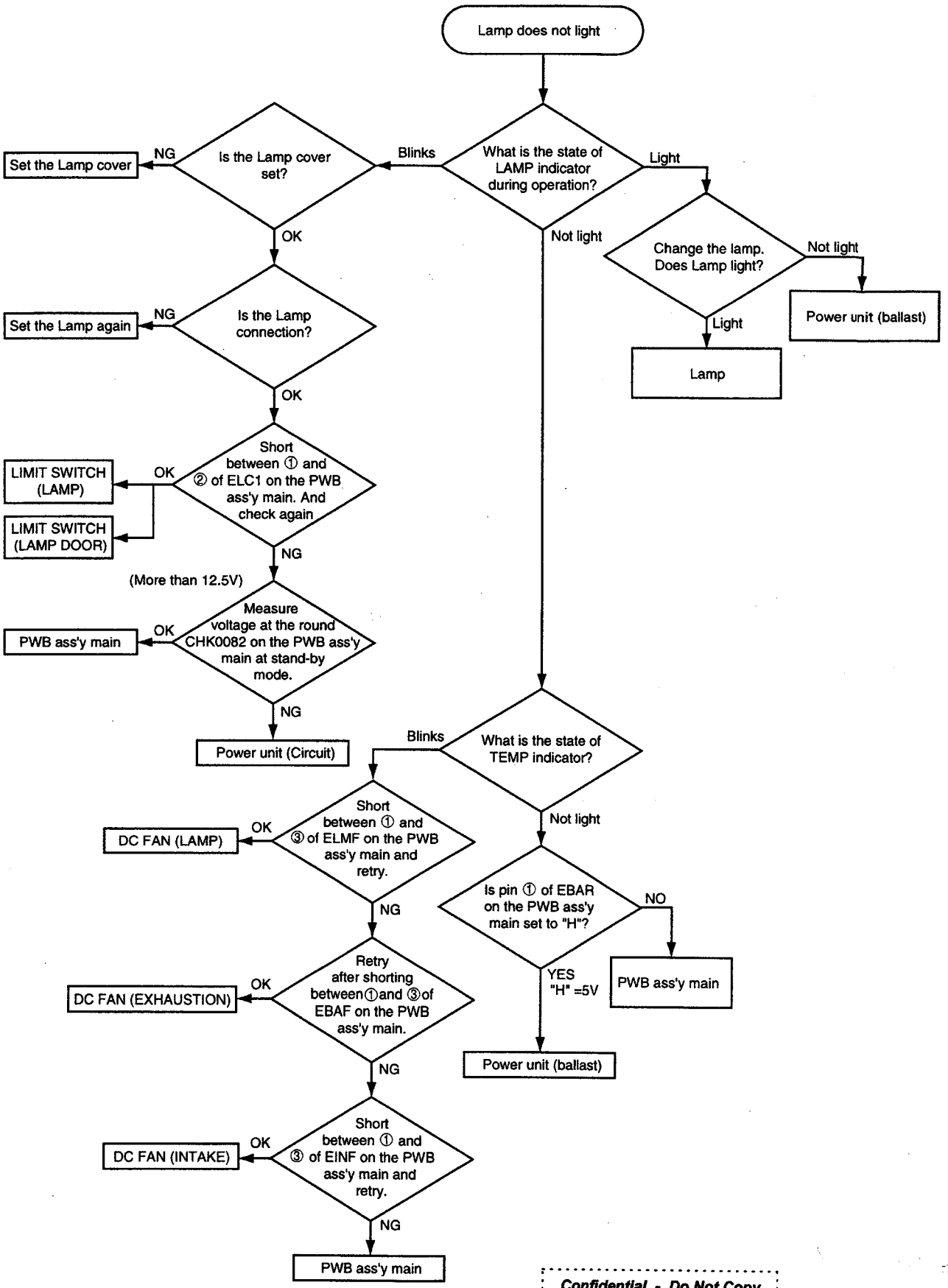
Check points at trouble shooting

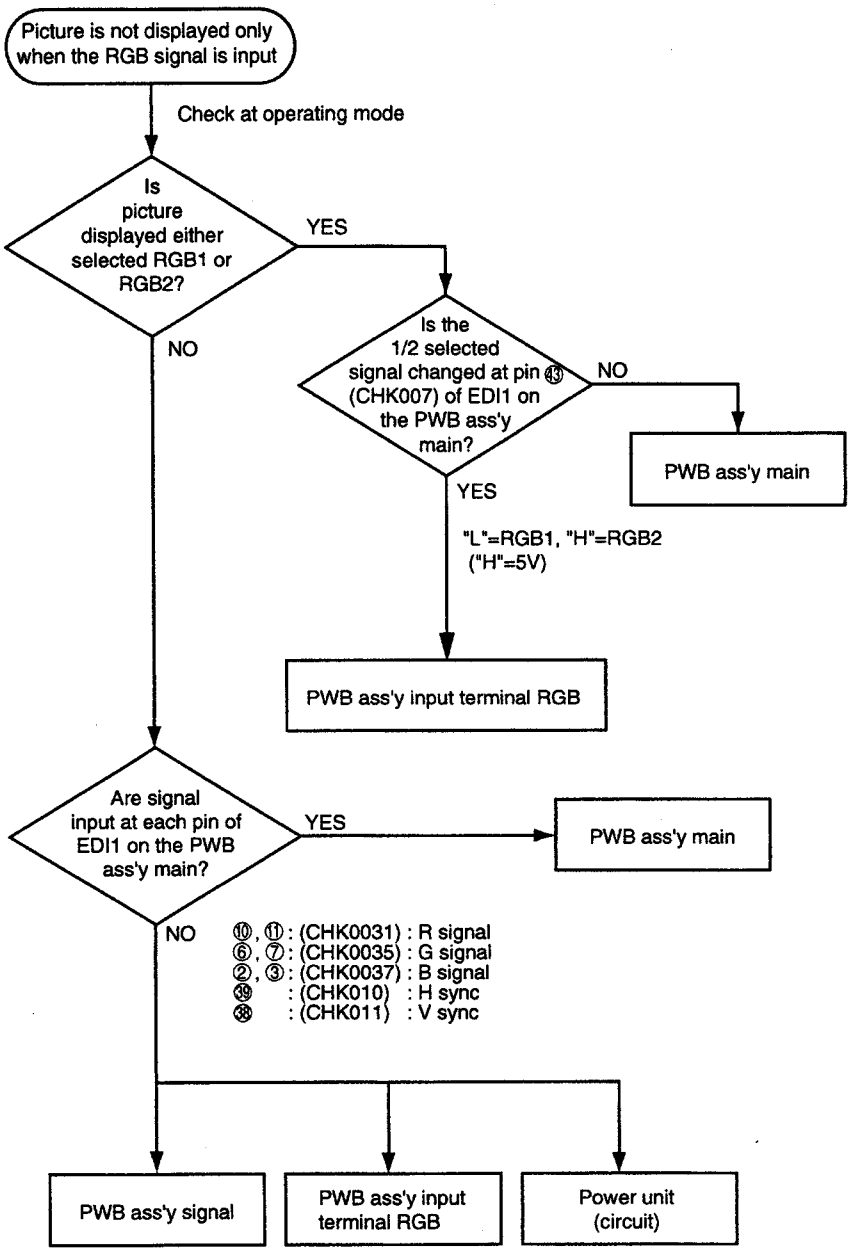


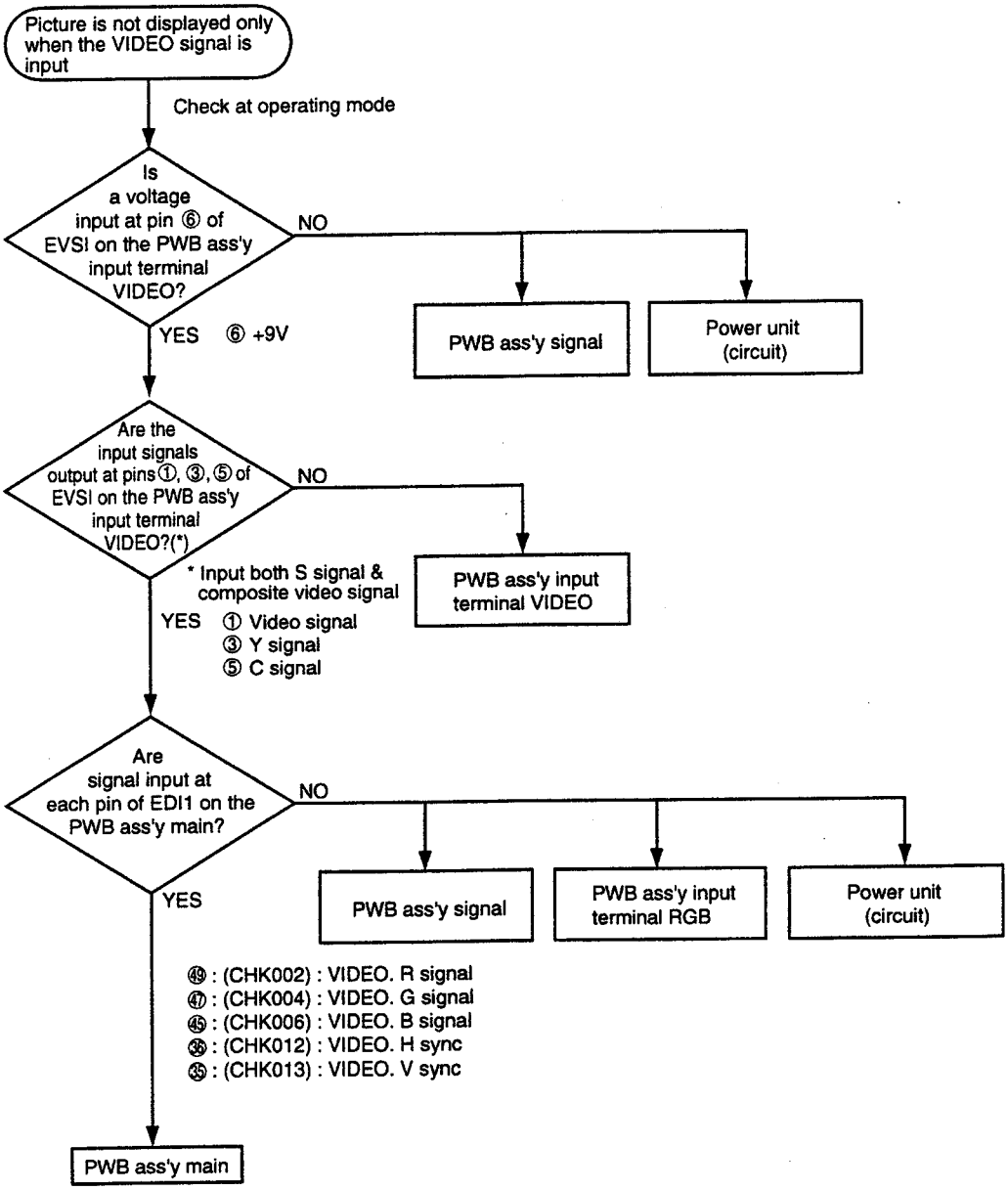
< Top view without upper case >

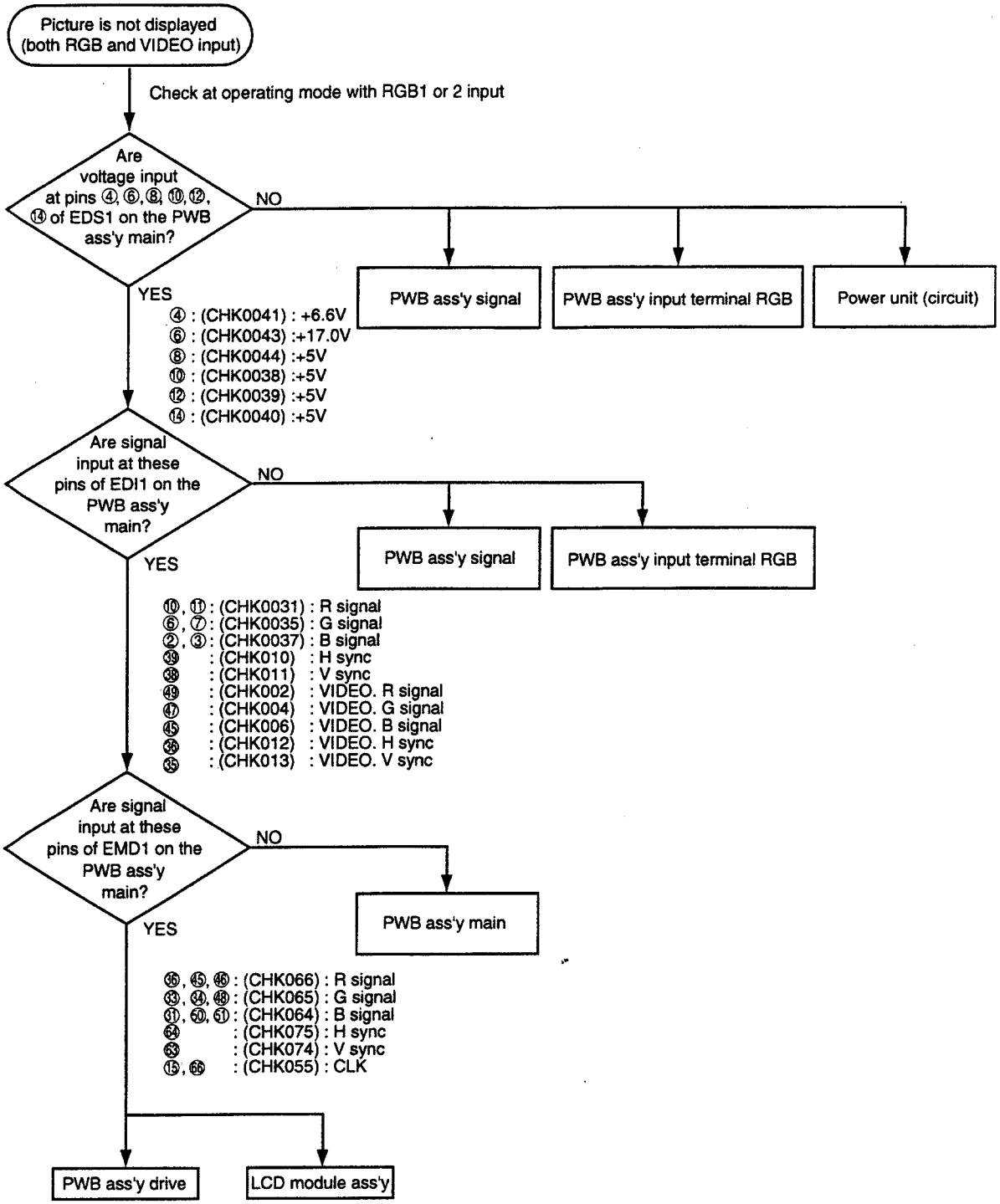
Connectors on the back side of PWB ass'y MAIN are drawn by dotted line.

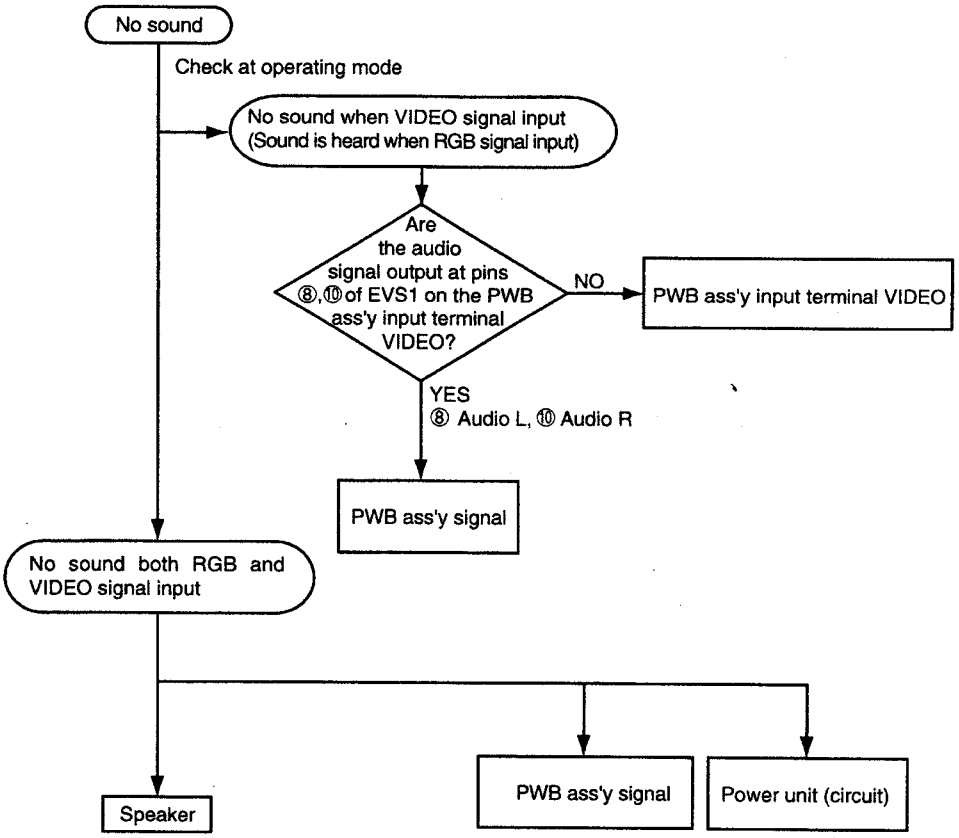

Power can not be turned on
Are voltage input at pins①, ④, ⑥of EDS1 on the PWB ass'y main at standby mode?
NO
YES
Power unit (circuit)
PWB ass'y FILTER
Fuse
① : (CHK0082) :+12.5V
④ : (CHK0041) :+6.6V
⑥ : (CHK0043) :+17.0V
Measure voltage at pin㉘of EDI1 on the PWB ass'y main at standby mode.
CHK0023 = L
Disconnect ETEP form PWB ass'y main. And retry turn on?
NO
PWB ass'y main
㉘ : (CHK0023) = H (H = 2.5V)
OK
PWB ass'y main
PWB ass'y TEMPERATURE

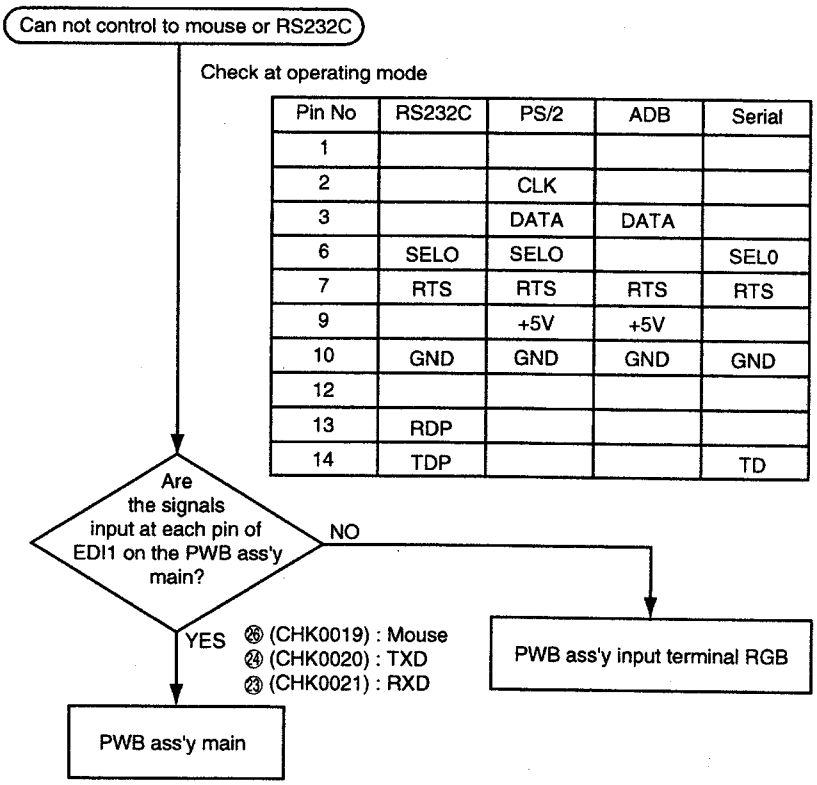

Lamp does not light
What is the state of LAMP indicator during operation?
Blinks
Light
Not light
Is the Lamp cover set?
NG
Set the Lamp cover
OK
Change the lamp. Does Lamp light?
Not light
Power unit (ballast)
Light
Lamp
Is the Lamp connection?
NG
Set the Lamp again
OK
Short between ① and ② of ELC1 on the PWB ass'y main. And check again
OK
LIMIT SWITCH (LAMP)
LIMIT SWITCH (LAMP DOOR)
NG
(More than 12.5V)
Measure voltage at the round CHK0082 on the PWB ass'y main at stand-by mode.
OK
PWB ass'y main
NG
Power unit (Circuit)
What is the state of TEMP indicator?
Blinks
Not light
Short between ① and ③ of ELMF on the PWB ass'y main and retry.
OK
DC FAN (LAMP)
NG
Is pin ① of EBAR on the PWB ass'y main set to "H"?
NO
PWB ass'y main
YES "H" =5V
Retry after shorting between①and ③of EBAF on the PWB ass'y main.
OK
DC FAN (EXHAUSTION)
NG
Power unit (ballast)
Short between ① and ③ of EINF on the PWB ass'y main and retry.
OK
DC FAN (INTAKE)
NG
PWB ass'y main


Picture is not displayed only when the RGB signal is input
Check at operating mode
Is picture displayed either selected RGB1 or RGB2?
YES
NO
Is the 1/2 selected signal changed at pin ㊸ (CHK007) of EDI1 on the PWB ass'y main?
NO
PWB ass'y main
YES
"L"=RGB1, "H"=RGB2
("H"=5V)
PWB ass'y input terminal RGB
Are signal input at each pin of EDI1 on the PWB ass'y main?
YES
PWB ass'y main
NO
⑩, ⑪ : (CHK0031) : R signal
⑥, ⑦ : (CHK0035) : G signal
②, ③ : (CHK0037) : B signal
㊾ : (CHK010) : H sync
㊽ : (CHK011) : V sync
PWB ass'y signal
PWB ass'y input terminal RGB
Power unit (circuit)

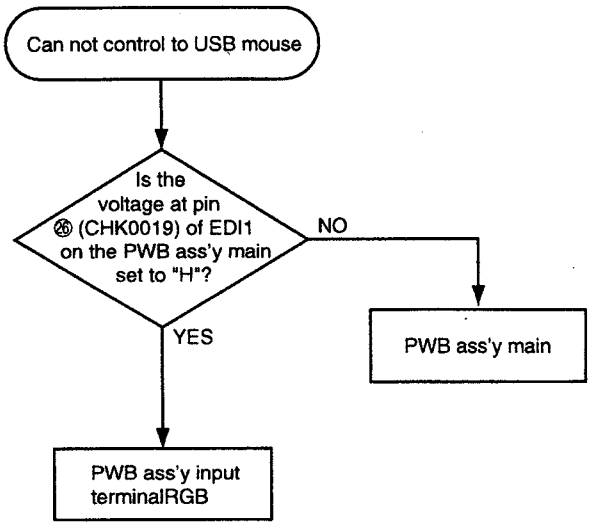

Picture is not displayed only when the VIDEO signal is input
Check at operating mode
Is a voltage input at pin ⑥ of EVSI on the PWB ass'y input terminal VIDEO?
NO
YES ⑥ +9V
PWB ass'y signal
Power unit (circuit)
Are the input signals output at pins ①, ③, ⑤ of EVSI on the PWB ass'y input terminal VIDEO?(*)
NO
* Input both S signal & composite video signal
YES ① Video signal
③ Y signal
⑤ C signal
PWB ass'y input terminal VIDEO
Are signal input at each pin of EDI1 on the PWB ass'y main?
NO
YES
PWB ass'y signal
PWB ass'y input terminal RGB
Power unit (circuit)
㊾ : (CHK002) : VIDEO. R signal
㊼ : (CHK004) : VIDEO. G signal
㊺ : (CHK006) : VIDEO. B signal
㊱ : (CHK012) : VIDEO. H sync
㊱ : (CHK013) : VIDEO. V sync
PWB ass'y main


Picture is not displayed (both RGB and VIDEO input)
Check at operating mode with RGB1 or 2 input
Are voltage input at pins ④, ⑥, ⑧, ⑩, ⑫, ⑭ of EDS1 on the PWB ass'y main?
NO
PWB ass'y signal
PWB ass'y input terminal RGB
Power unit (circuit)
YES
④ : (CHK0041) : +6.6V
⑥ : (CHK0043) :+17.0V
⑧ : (CHK0044) :+5V
⑩ : (CHK0038) :+5V
⑫ : (CHK0039) :+5V
⑭ : (CHK0040) :+5V
Are signal input at these pins of EDI1 on the PWB ass'y main?
NO
PWB ass'y signal
PWB ass'y input terminal RGB
YES
⑩, ⑪ : (CHK0031) : R signal
⑥, ⑦ : (CHK0035) : G signal
②, ③ : (CHK0037) : B signal
㊴ : (CHK010) : H sync
㊳ : (CHK011) : V sync
㊾ : (CHK002) : VIDEO. R signal
㊼ : (CHK004) : VIDEO. G signal
㊺ : (CHK006) : VIDEO. B signal
㊶ : (CHK012) : VIDEO. H sync
㊵ : (CHK013) : VIDEO. V sync
Are signal input at these pins of EMD1 on the PWB ass'y main?
NO
PWB ass'y main
YES
㊻, ㊺, ㊻ : (CHK066) : R signal
㊸, ㊹, ㊽ : (CHK065) : G signal
㊶, ㊿, ㊶ : (CHK064) : B signal
㊹ : (CHK075) : H sync
㊸ : (CHK074) : V sync
⑮, ㊻ : (CHK055) : CLK
PWB ass'y drive
LCD module ass'y


No sound
Check at operating mode
No sound when VIDEO signal input
(Sound is heard when RGB signal input)
Are the audio signal output at pins ⑧,⑩ of EVS1 on the PWB ass'y input terminal VIDEO?
NO
PWB ass'y input terminal VIDEO
YES
⑧ Audio L, ⑩ Audio R
PWB ass'y signal
No sound both RGB and VIDEO signal input
Speaker
PWB ass'y signal
Power unit (circuit)


Can not control to mouse or RS232C
Check at operating mode
Are the signals input at each pin of EDI1 on the PWB ass'y main?
NO
YES
㉖ (CHK0019) : Mouse
㉔ (CHK0020) : TXD
㉓ (CHK0021) : RXD
PWB ass'y input terminal RGB
PWB ass'y main

Pin No	RS232C	PS/2	ADB	Serial
1				
2		CLK		
3		DATA	DATA	
6	SELO	SELO		SEL0
7	RTS	RTS	RTS	RTS
9		+5V	+5V	
10	GND	GND	GND	GND
12				
13	RDP			
14	TDP			TD

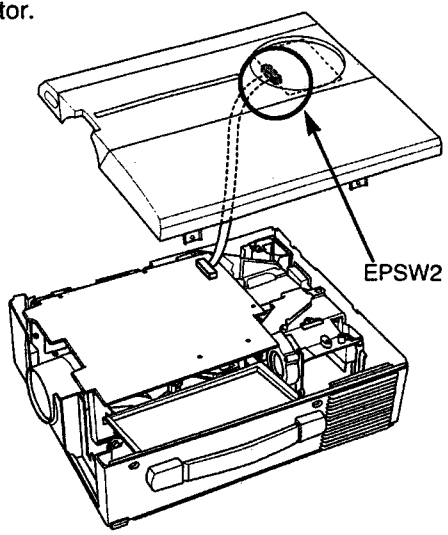

Can not control to USB mouse
Is the voltage at pin ㉖ (CHK0019) of EDI1 on the PWB ass'y main set to "H"?
NO
YES
PWB ass'y main
PWB ass'y input terminalRGB

6. Service points

6 - 1 POINT

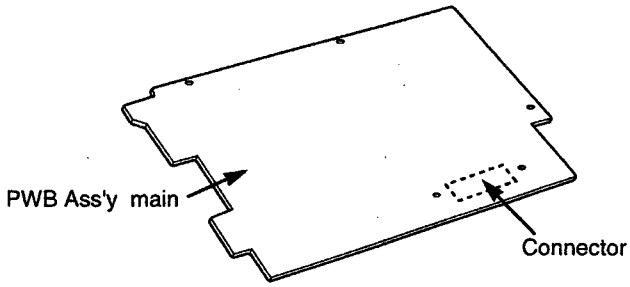
• Cautions when removing the Upper case

In the Upper case, an operation PWB is installed. When removing, lift carefully without using excessive force to prevent damaging the ESW2 connector.



• Cautions when removing the main PWB

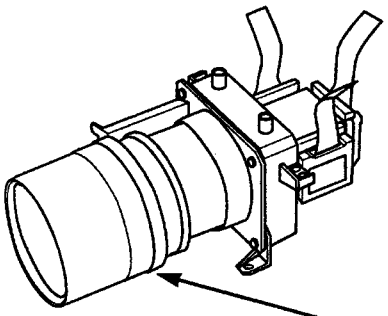
When removing the main PWB, there is danger of damaging the connector connecting the drive PWB. Lift up the part near the main PWB connector and disconnect the connector before removing the main PWB.



• Before Replacing the LCD / Lens Prism

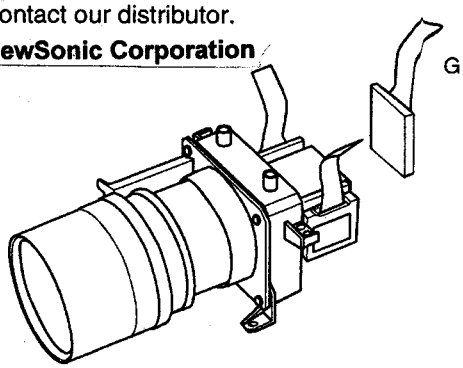
You should not replace separately the parts of the liquid crystal LCD / Lens Prism because it works properly only when used together. Therefore, regarding these parts, you can either replace part , LCD / Lens Prism Ass'y, or send the whole unit LCD / Lens Prism Ass'y back to **ViewSonic** we will replace the malfunctioning part, recondition the device and send it back to you. In that case please contact our distributor.

DISTRIBUTOR



- Do not disassemble the unit because replacement of separate parts is not possible.
- For repairs of the product, please contact our distributor.

ViewSonic Corporation



Replacement of G Panel→Reconditioning

Return

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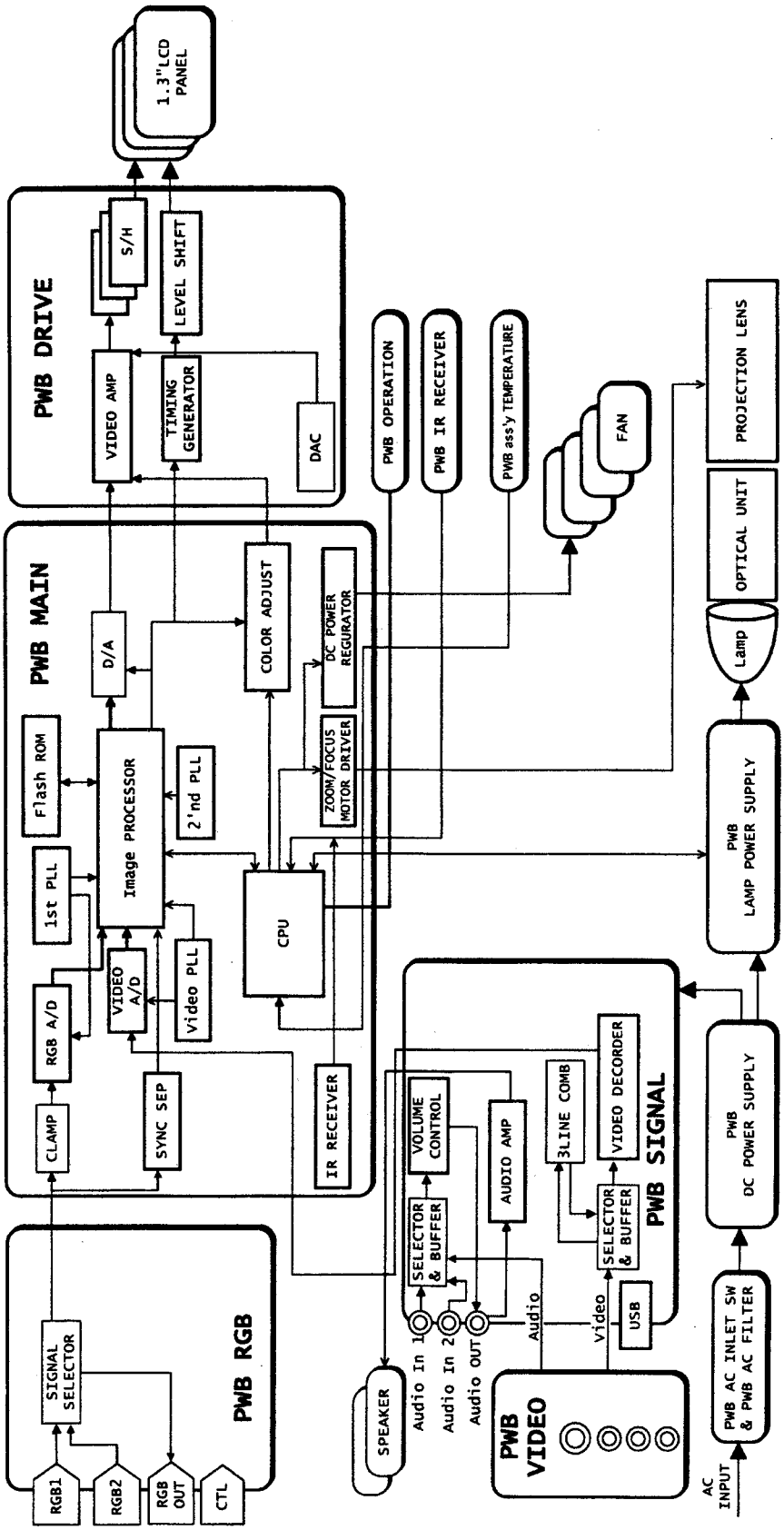
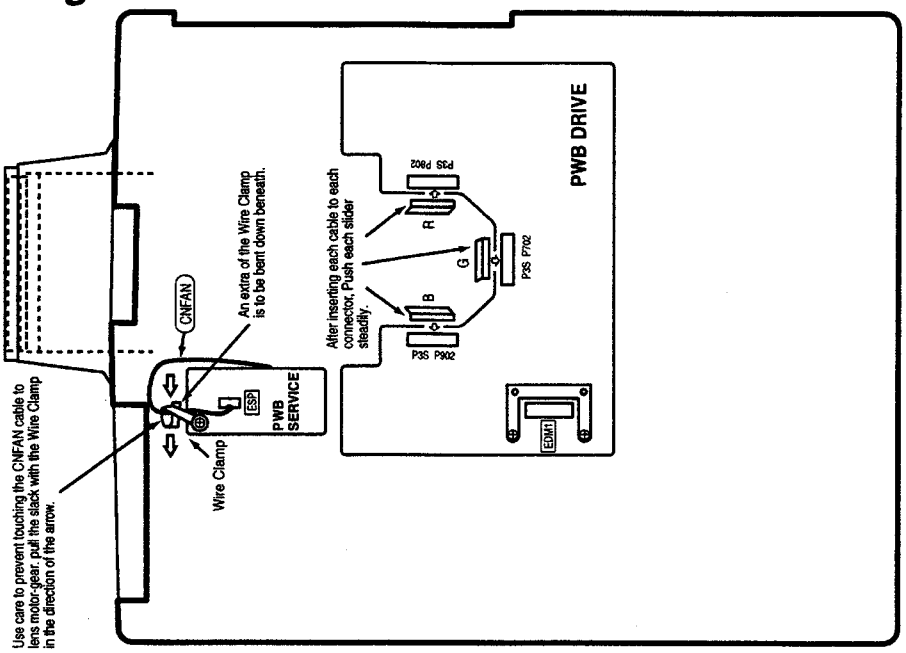
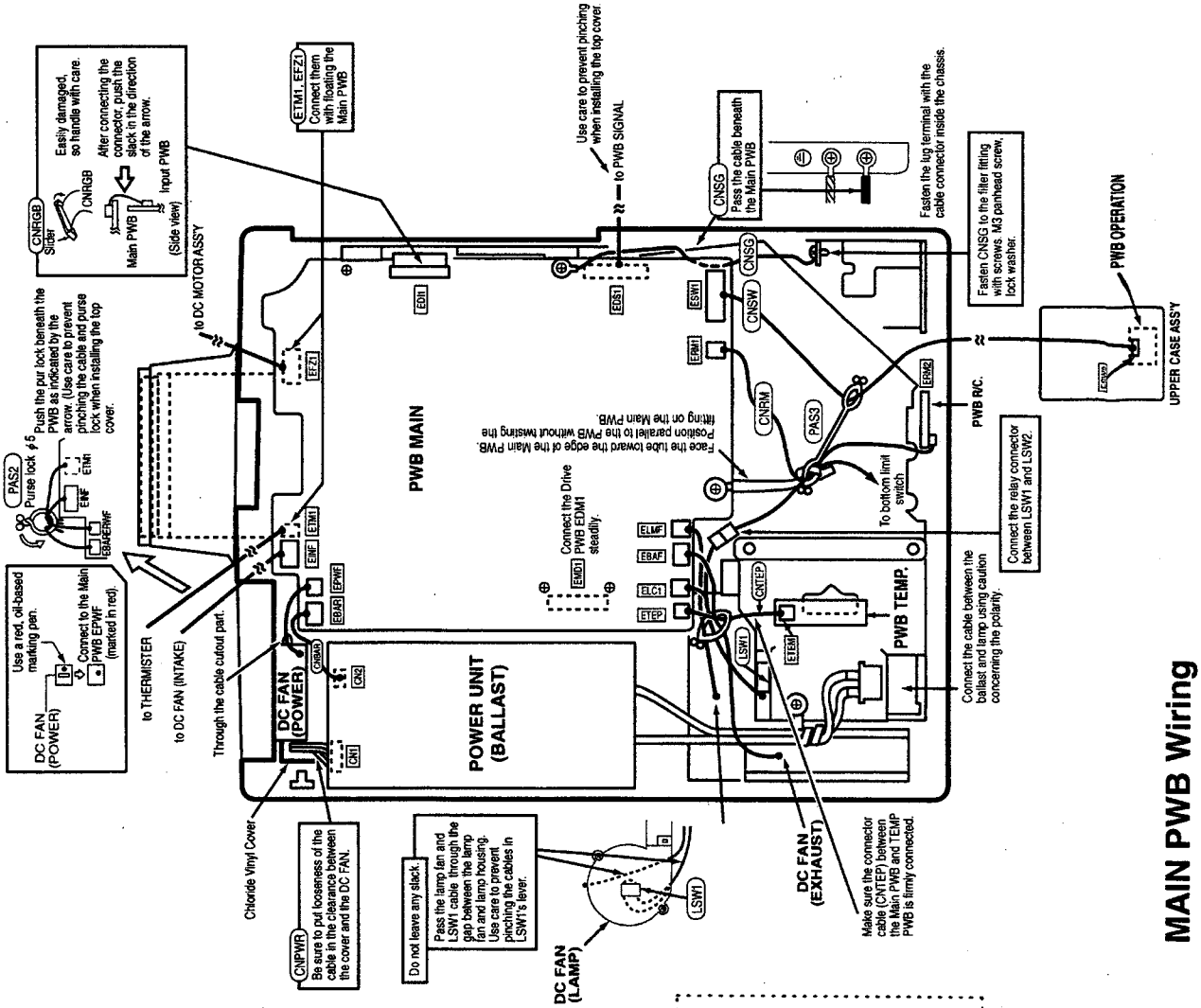
7. Block diagram



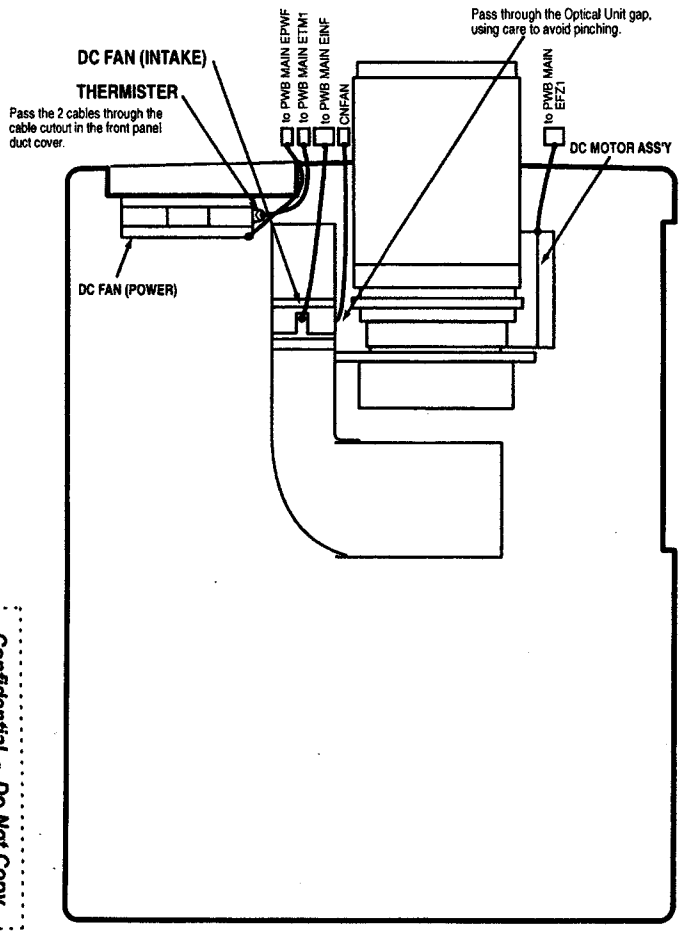
8. Wiring diagram


PWB DRIVE
P8S P802
P8S P702
P3S P902
EDM1
CNFAN
ESP
PWB SERVICE
An extra of the Wire Clamp is to be bent down beneath.
After inserting each cable to each connector, Push each slider steadily.
Wire Clamp
Use care to prevent touching the CNFAN cable to lens motor-gear, pull the slack with the Wire Clamp in the direction of the arrow.

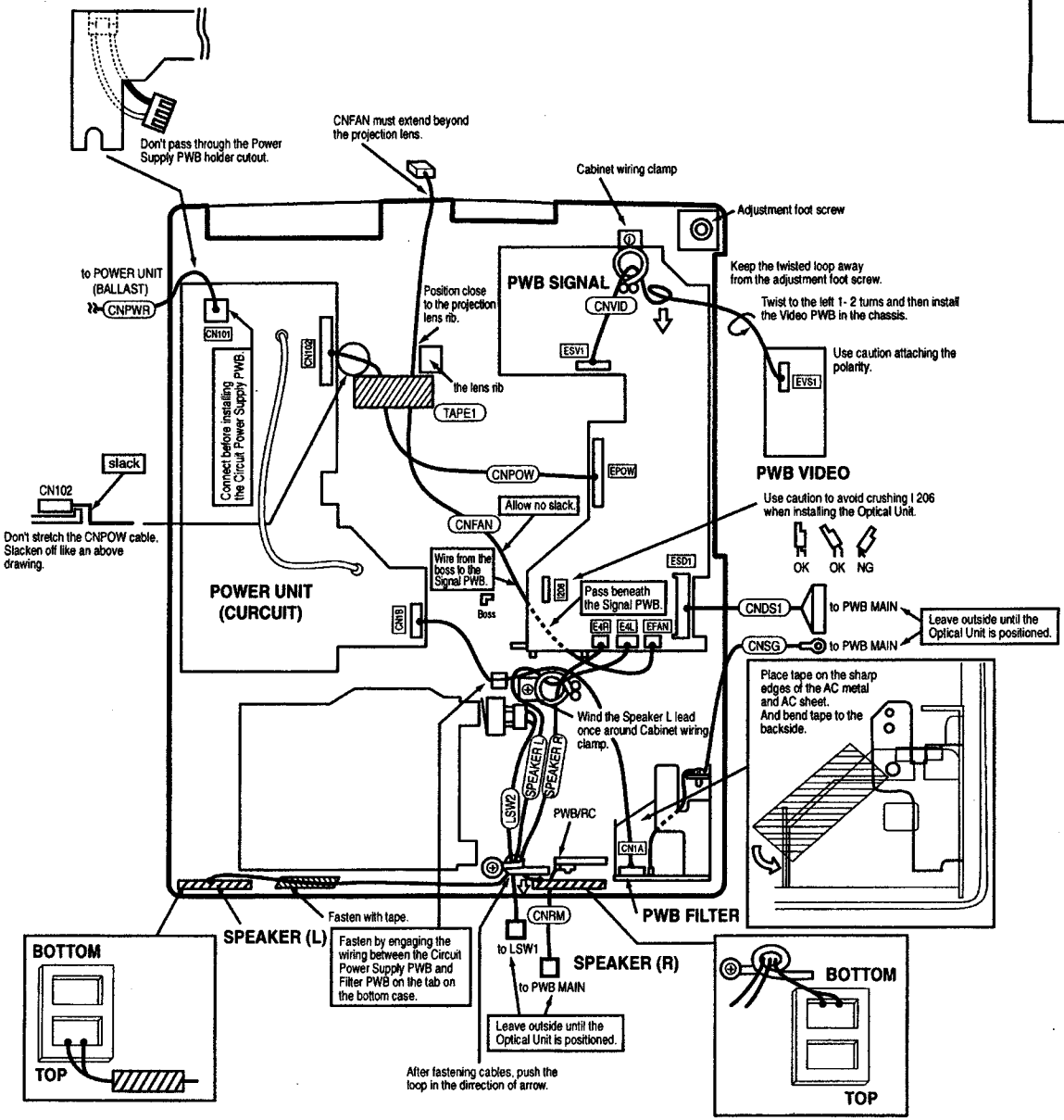
DRIVE PWB Wiring


PWB MAIN
POWER UNIT (BALLAST)
PWB TEMP.
DC FAN (POWER)
DC FAN (EXHAUST)
DC FAN (LAMP)
PWB OPERATION
UPPER CASE ASSY
PWB R/C.
CNRGB
Slider
Easily damaged, so handle with care.
After connecting the connector, push the slack in the direction of the arrow.
Input PWB
Main PWB
(Side view)
to DC MOTOR ASSY
ETM1, EFZ1
Connect them with floating the Main PWB
Use care to prevent pinching when installing the top cover.
to PWB SIGNAL
CNSG
Pass the cable beneath the Main PWB
Fasten the lug terminal with the cable connector inside the chassis.
Fasten CNSG to the filter fitting with screws. M3 panhead screw, lock washer.
CNSW
ESW1
EDM1
EDB1
EDH1
EFM1
CNRM
PAS3
EDM2
Face the tube toward the edge of the Main PWB. Position parallel to the PWB without twisting the fitting on the Main PWB.
Push the pur lock beneath the PWB as indicated by the arrow. (Use care to prevent pinching the cable and purse lock when installing the top cover.
PAS2
Purse lock
EINF
ETM1
EBAR
EPWF
Use a red, oil-based marking pen.
Connect to the Main PWB EPWF (marked in red).
DC FAN (POWER)
to THERMISTER
to DC FAN (INTAKE)
Through the cable cutout part.
CNPWR
CN2
CN1
Connect the Drive PWB EDM1 steadily.
EDM1
ELMP
EBAF
ELC1
ETEP
CNTEP
LSW1
ETEM
To bottom limit switch
Connect the relay connector between LSW1 and LSW2.
Connect the cable between the ballast and lamp using caution concerning the polarity.
Chloride Vinyl Cover
Be sure to put looseness of the cable in the clearance between the cover and the DC FAN.
Do not leave any slack.
Pass the lamp fan and LSW1 cable through the gap between the lamp fan and lamp housing. Use care to prevent pinching the cables in LSW1's lever.
Make sure the connector cable (CNTEP) between the Main PWB and TEMP PWB is firmly connected.

MAIN PWB Wiring


DC FAN (INTAKE)
THERMISTER
Pass the 2 cables through the cable cutout in the front panel duct cover.
to PWB MAIN EPWF
to PWB MAIN ETM1
to PWB MAIN EINF
CNFAN
Pass through the Optical Unit gap, using care to avoid pinching.
to PWB MAIN EFZ1
DC MOTOR ASS'Y
DC FAN (POWER)

Optical Unit Wiring


Don't pass through the Power Supply PWB holder cutout.
CNFAN must extend beyond the projection lens.
Cabinet wiring clamp
Adjustment foot screw
to POWER UNIT (BALLAST)
CNPWR
CN101
Connect before installing the Circuit Power Supply PWB.
CN103
Position close to the projection lens rib.
PWB SIGNAL
CNVID
ESV1
Keep the twisted loop away from the adjustment foot screw.
Twist to the left 1- 2 turns and then install the Video PWB in the chassis.
Use caution attaching the polarity.
EVS1
the lens rib
TAPE1
PWB VIDEO
slack
CN102
Don't stretch the CNPOW cable. Slacken off like an above drawing.
CNPOW
EPOW
Allow no slack.
Use caution to avoid crushing I 206 when installing the Optical Unit.
OK OK NG
CNFAN
Wire from the boss to the Signal PWB.
Boss
POWER UNIT (CURCUIT)
CN9
I206
Pass beneath the Signal PWB.
ESD1
E4R E4L EFAN
CNDS1
to PWB MAIN
CNSG
to PWB MAIN
Leave outside until the Optical Unit is positioned.
Place tape on the sharp edges of the AC metal and AC sheet. And bend tape to the backside.
Wind the Speaker L lead once around Cabinet wiring clamp.
SPEAKER L
SPEAKER R
LSW2
PWB/RC
CN1A
PWB FILTER
CNRM
to LSW1
SPEAKER (R)
to PWB MAIN
Leave outside until the Optical Unit is positioned.
SPEAKER (L)
Fasten with tape.
Fasten by engaging the wiring between the Circuit Power Supply PWB and Filter PWB on the tab on the bottom case.
After fastening cables, push the loop in the direction of arrow.
BOTTOM
TOP
BOTTOM
TOP

Set Bottom Wiring

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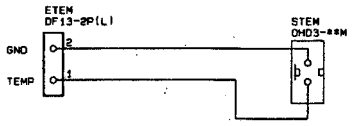
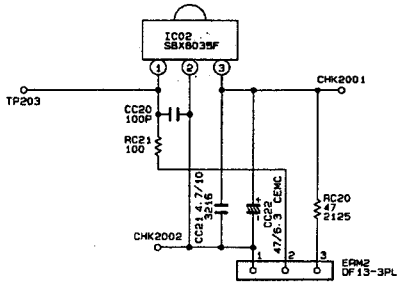
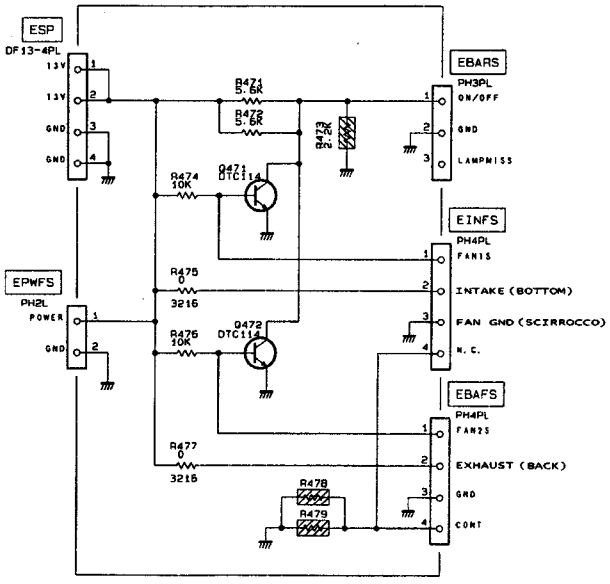
9. Basic circuit diagram



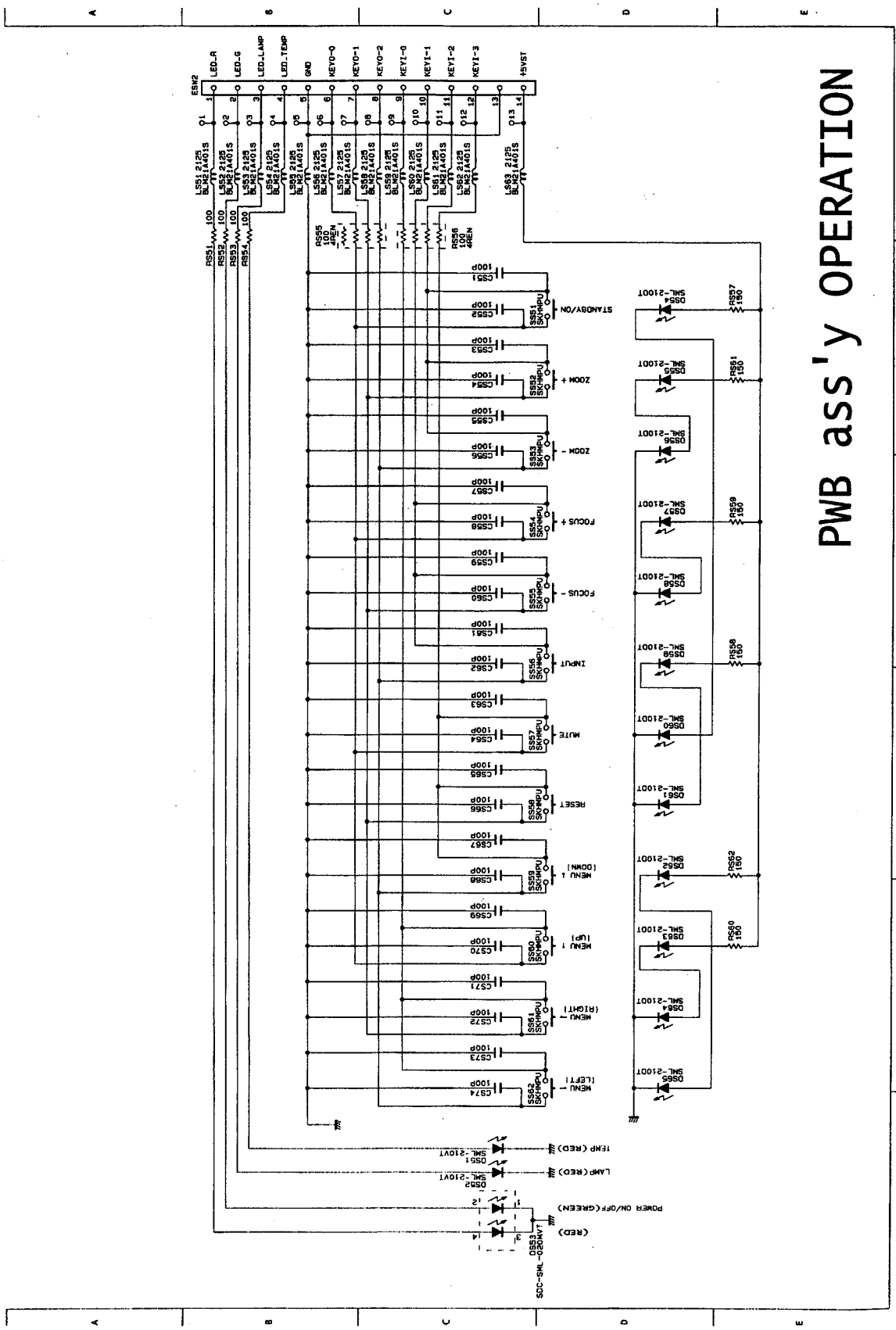
PWB ass'y TEMPERATURE

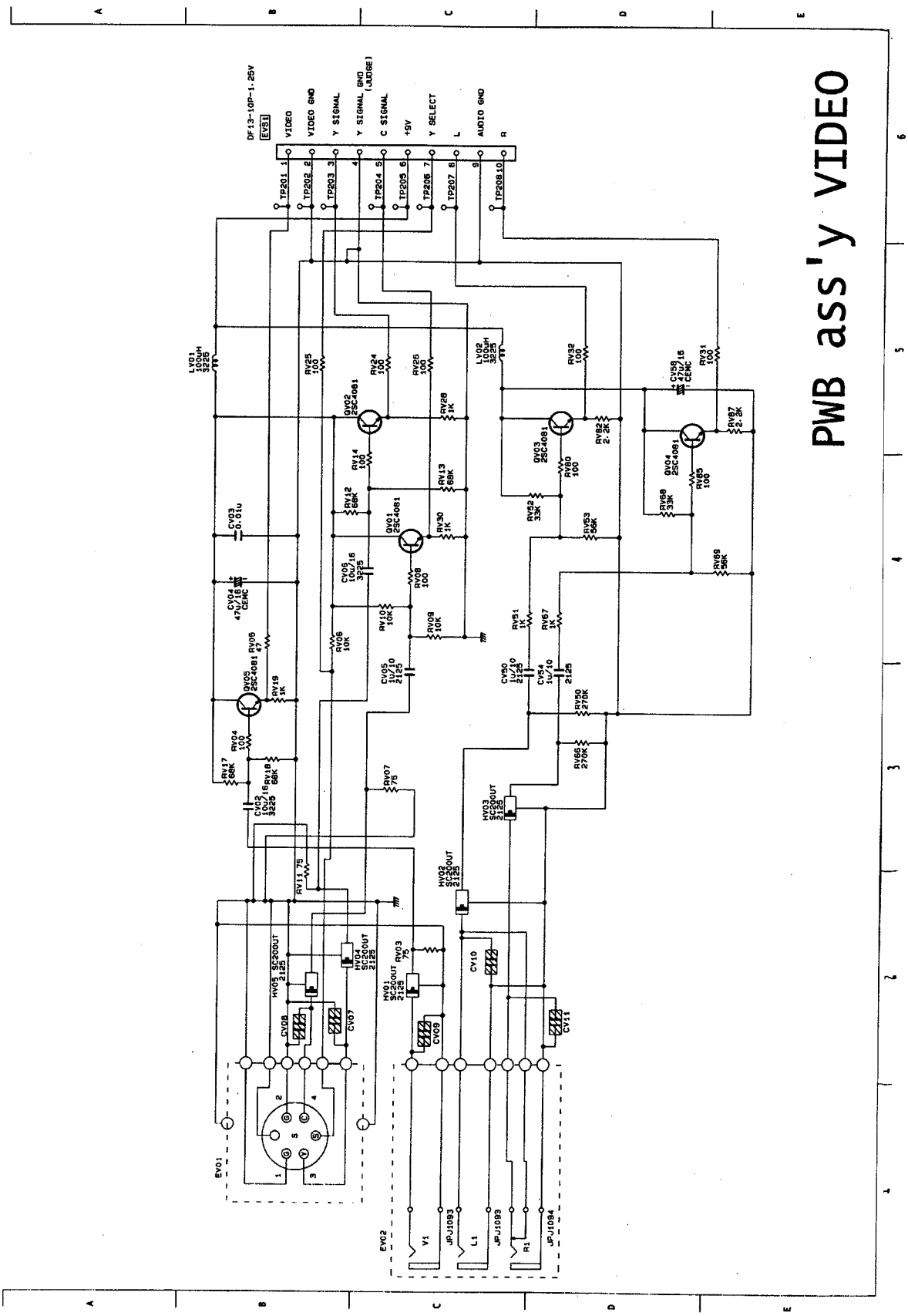


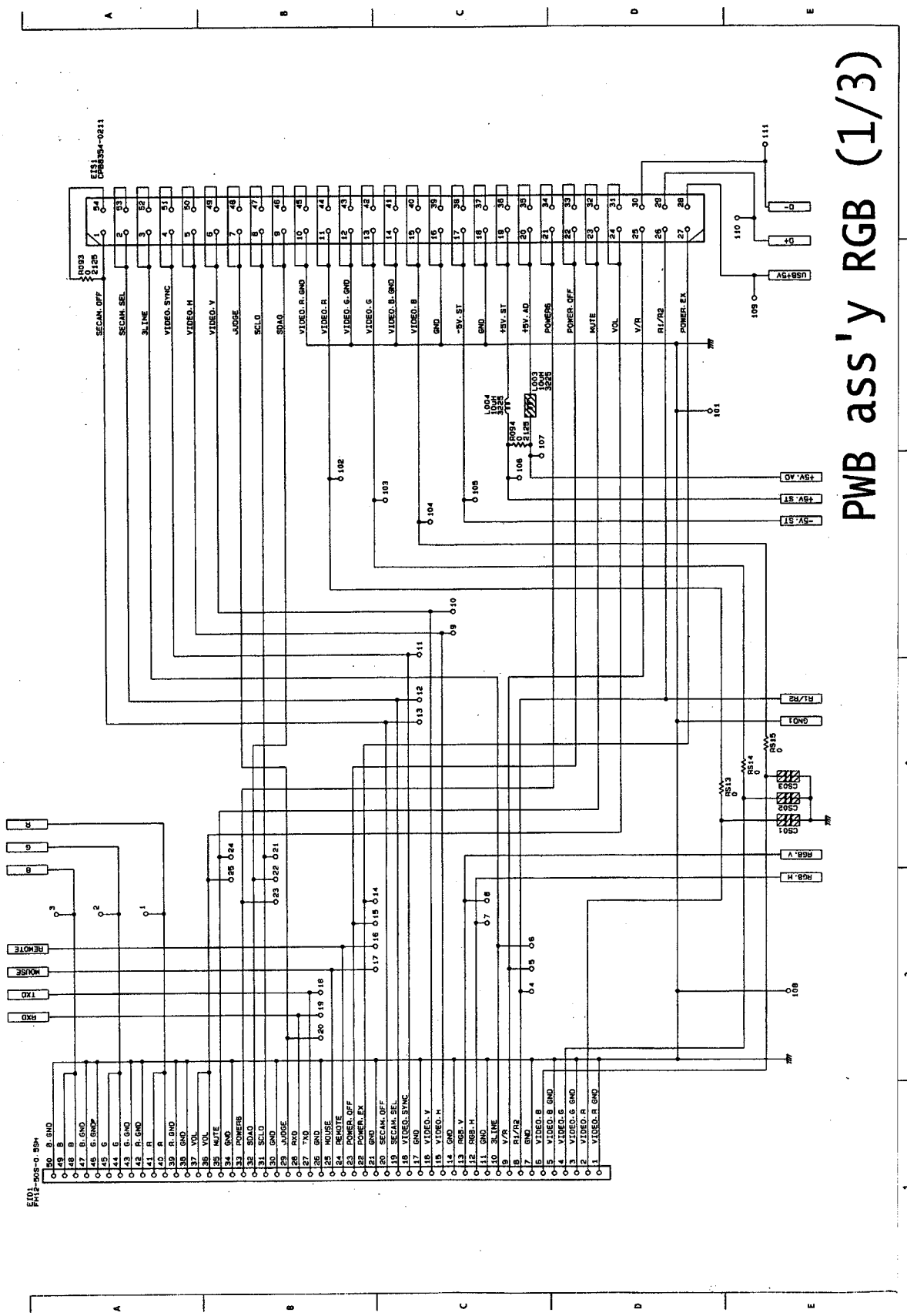
PWB ass'y R/C.

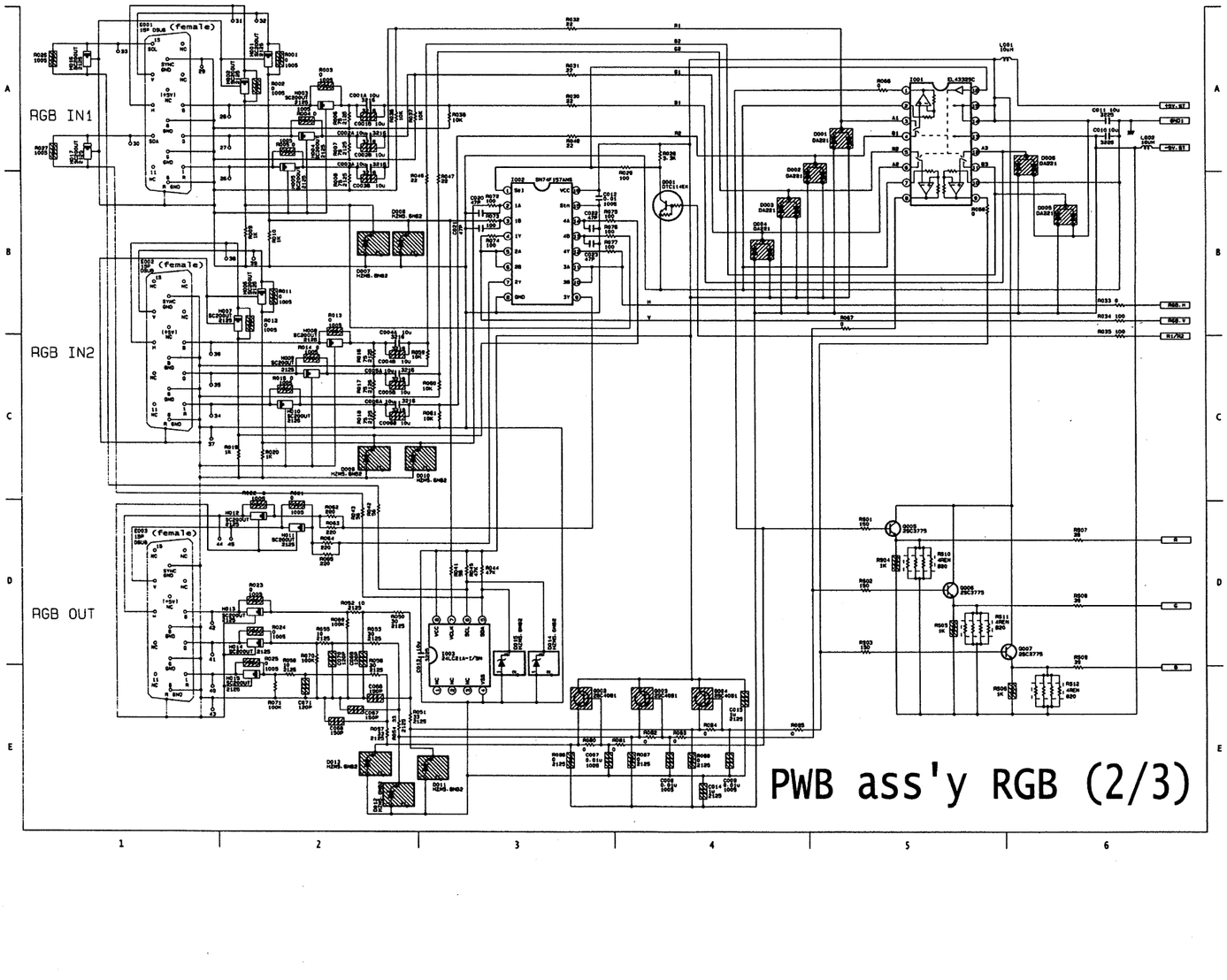


PWB ass'y SERVICE


PWB ass'y OPERATION
CN2
LED_R
LED_G
LED_LAMP
LED_TEMP
GND
KEY0-0
KEY0-1
KEY0-2
KEY1-0
KEY1-1
KEY1-2
KEY1-3
+5VST
STANDBY/ON
ZOOM +
ZOOM -
FOCUS +
FOCUS -
INPUT
MUTE
RESET
MENU ↓ (DOWN)
MENU ↑ (UP)
MENU → (RIGHT)
MENU ← (LEFT)
TEMP (RED)
LAMP (RED)
POWER ON/OFF (GREEN)
(RED)


PWB ass'y VIDEO
DF13-10P-1.25V
[EVS1]
VIDEO
VIDEO GND
Y SIGNAL
Y SIGNAL GND (JUDGE)
C SIGNAL
+9V
Y SELECT
L
AUDIO GND
R
TP201 1
TP202 2
TP203 3
4
TP204 5
TP205 6
TP206 7
TP207 8
9
TP208 10
LV01 100UH 3225
LV02 100UH 3225
QV01 2SC4081
QV02 2SC4081
QV03 2SC4081
QV04 2SC4081
QV05 2SC4081
RV01 100
RV02 100
RV03 75
RV04 100
RV05 47
RV06 10K
RV07 75
RV08 100
RV09 10K
RV10 10K
RV11 75
RV12 68K
RV13 68K
RV14 100
RV17 68K
RV18 68K
RV19 1K
RV24 100
RV25 100
RV26 100
RV28 1K
RV30 1K
RV31 100
RV32 100
RV50 270K
RV51 1K
RV52 33K
RV53 56K
RV55 100
RV56 270K
RV57 1K
RV58 33K
RV60 100
RV62 2.2K
RV67 2.2K
RV68 56K
CV01 0.01U
CV02 10U/16 3225
CV03 0.01U
CV04 47U/16 CEMC
CV05 10U/16 3225
CV07
CV08
CV09
CV10
CV11
CV50 1U/10 2125
CV51 1U/10 2125
CV58 47U/16 CEMC
HV01 SC200UT 2125
HV02 SC200UT 2125
HV03 SC200UT 2125
HV04 SC200UT 2125
HV05 SC200UT 2125
EV01
EV02
V1
L1
R1
JPJ1093
JPJ1093
JPJ1094


PWB ass'y RGB (1/3)



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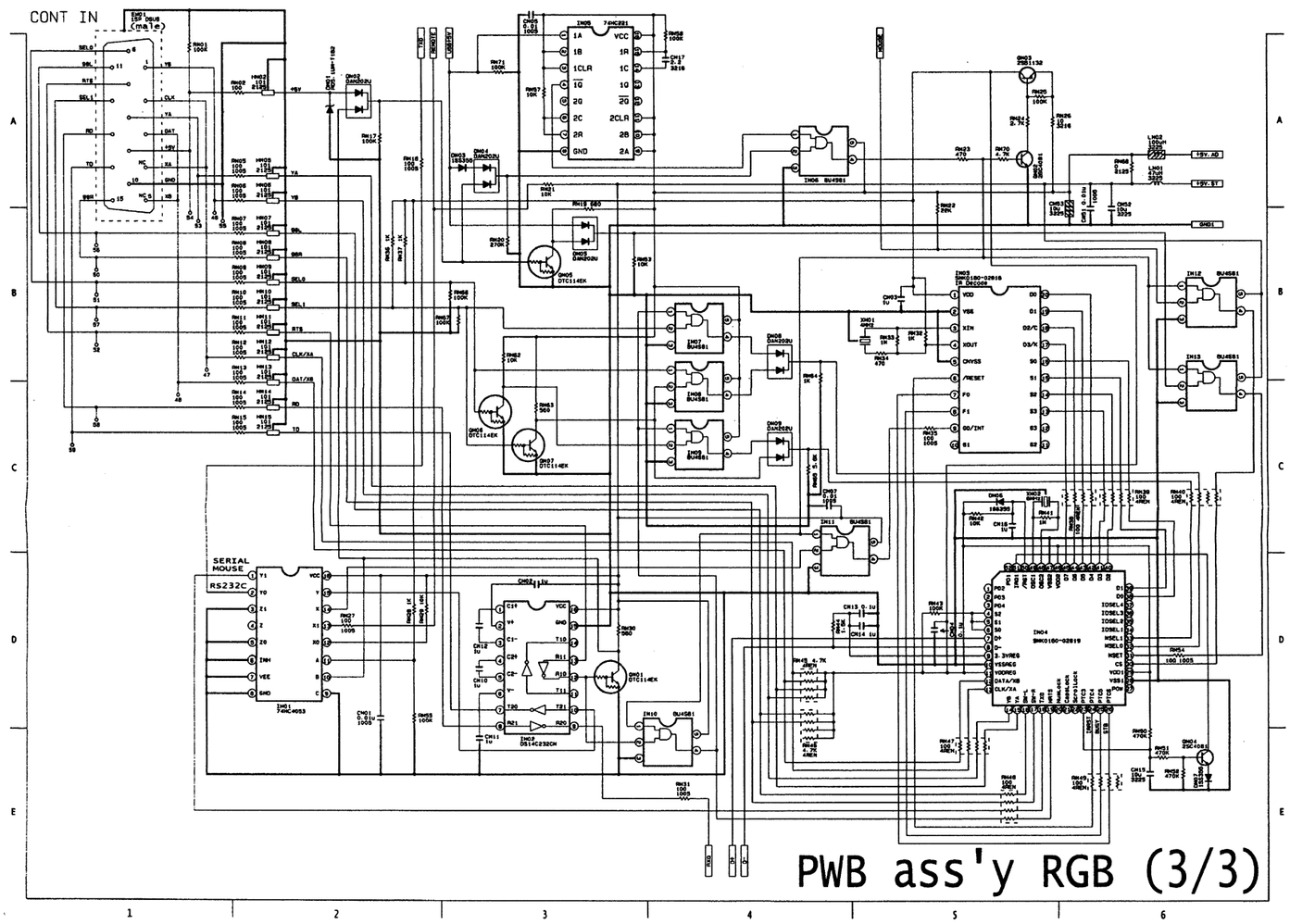

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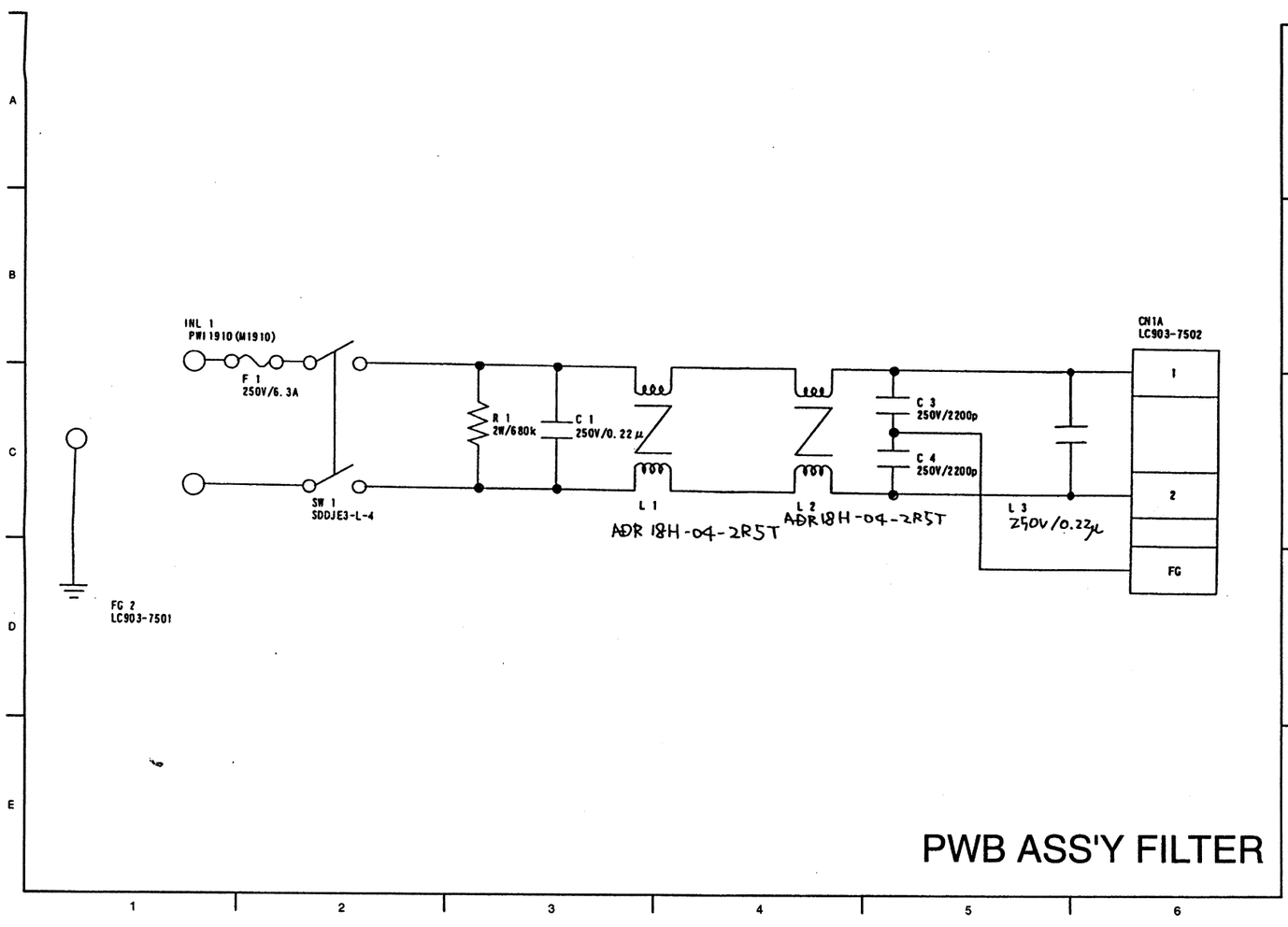
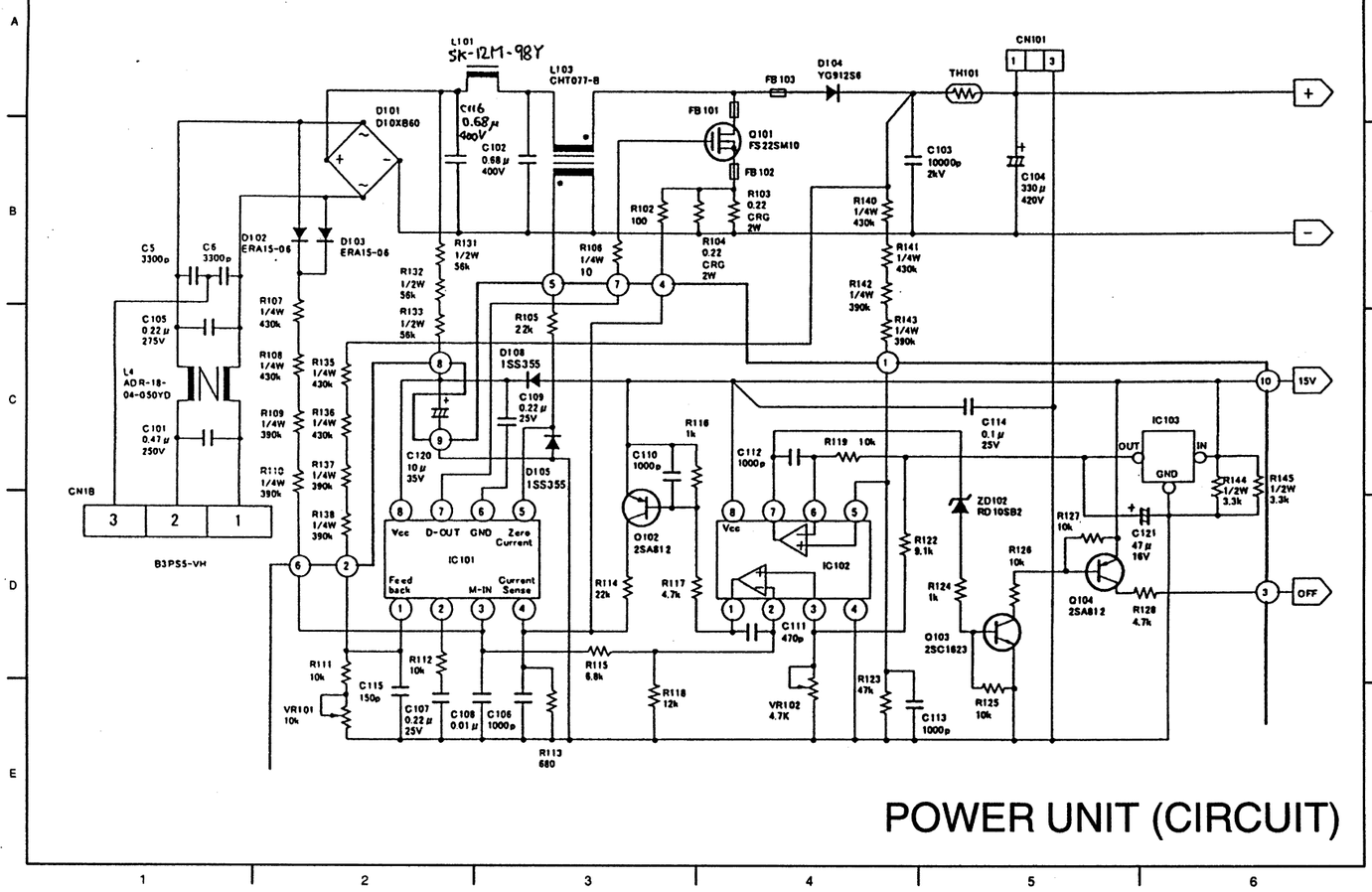
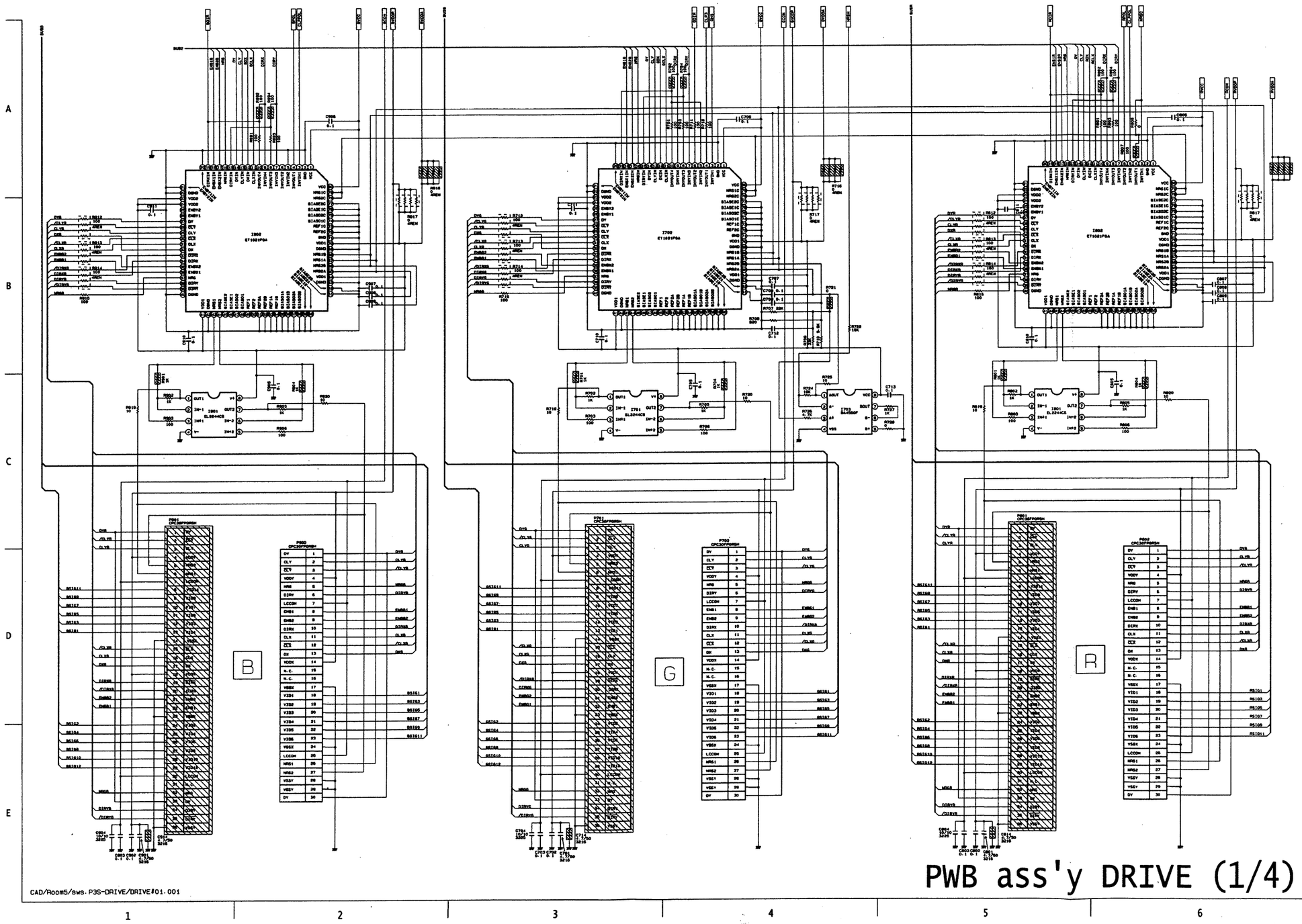
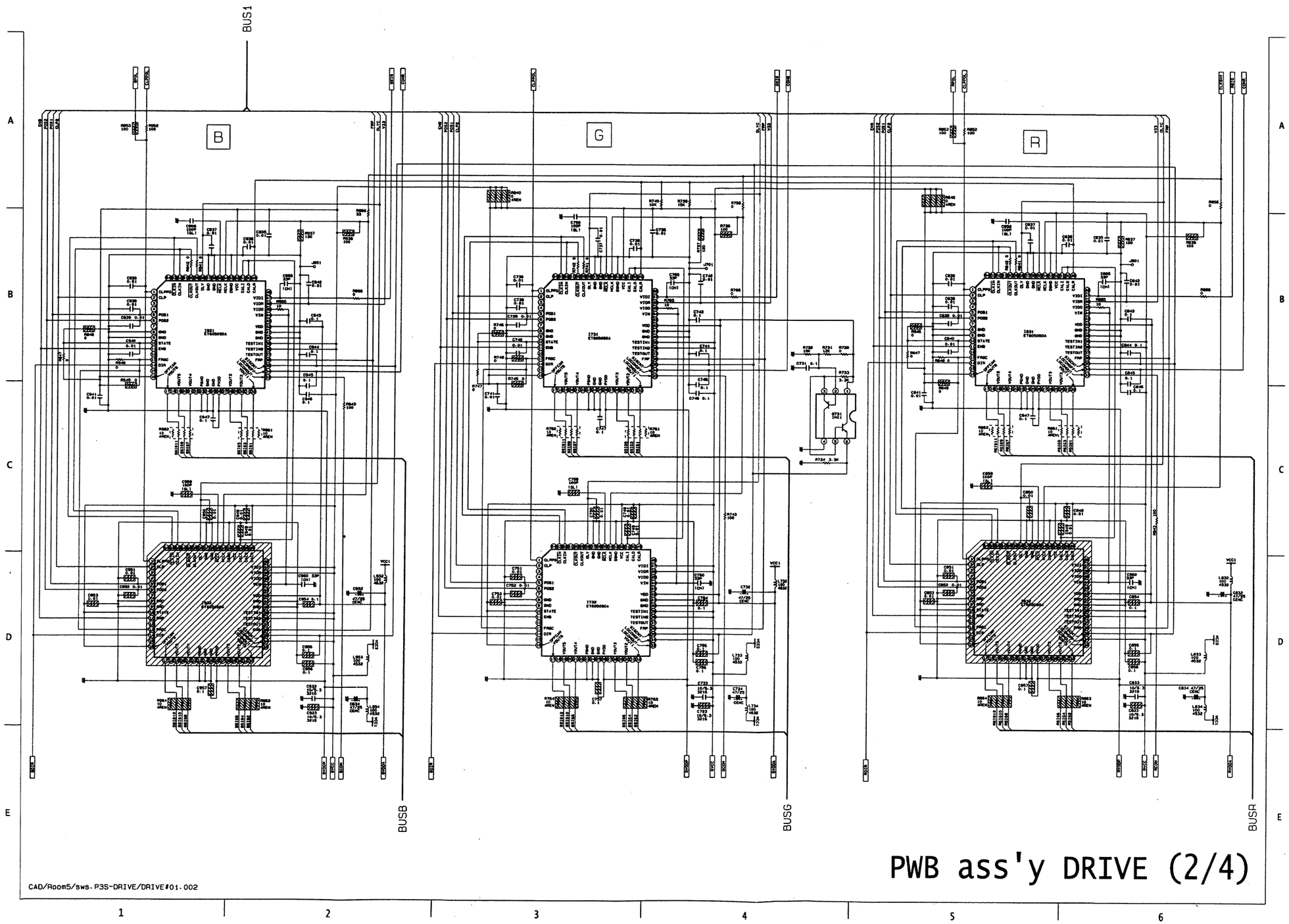


PWB ASS'Y FILTER



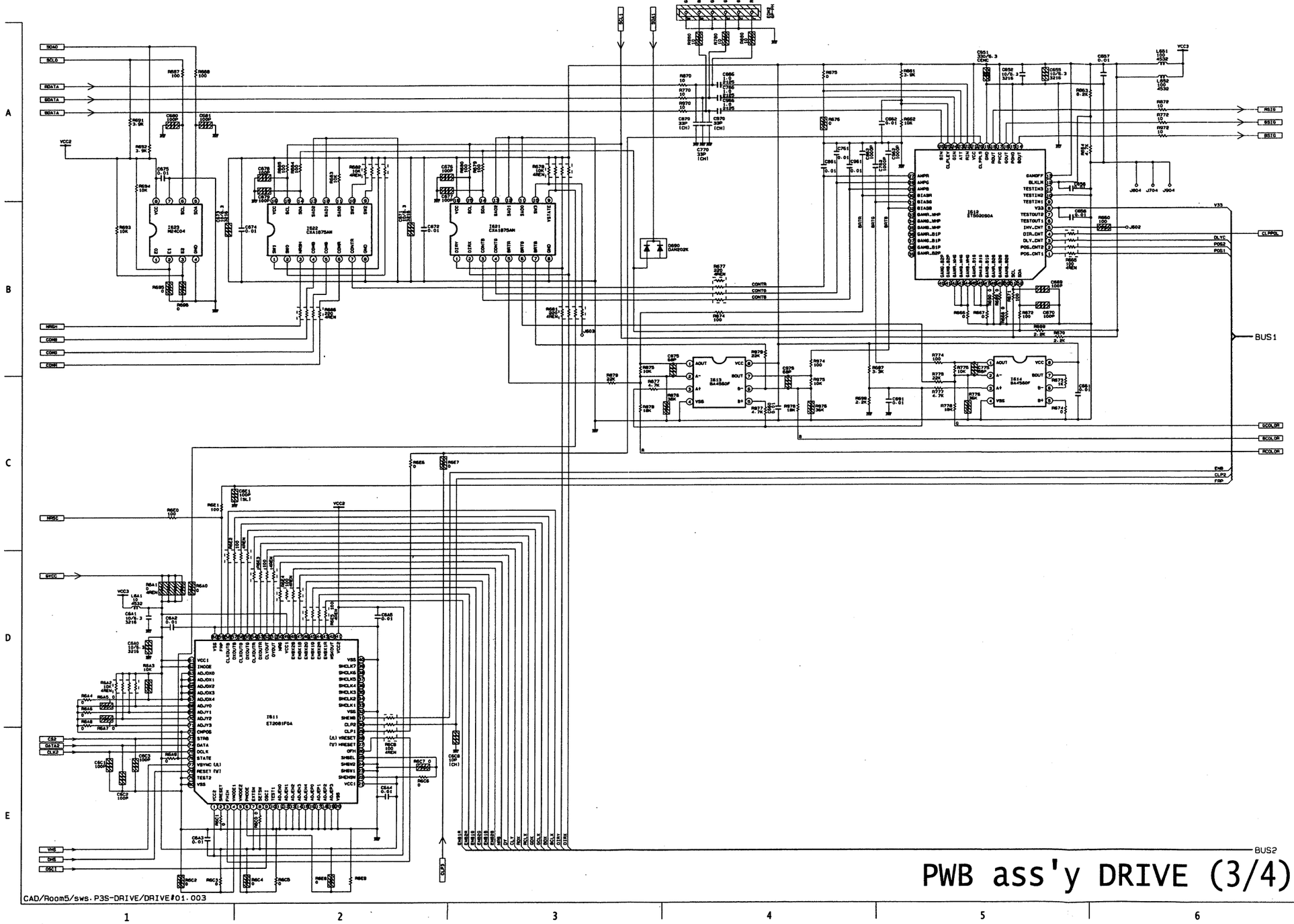
POWER UNIT (CIRCUIT)


B
G
R
PWB ass'y DRIVE (1/4)
CAD/Room5/sws.P3S-DRIVE/DRIVE#01.001

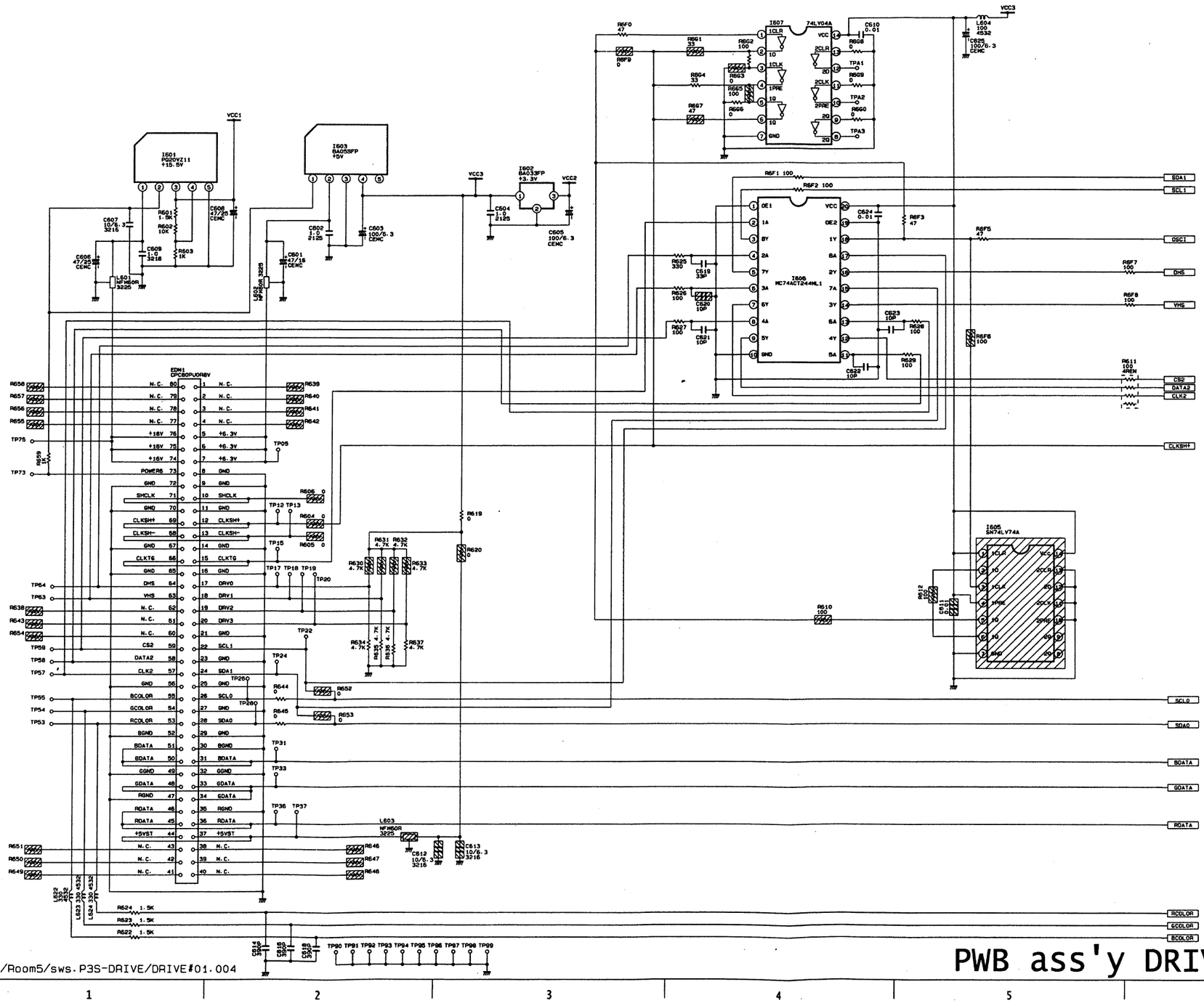


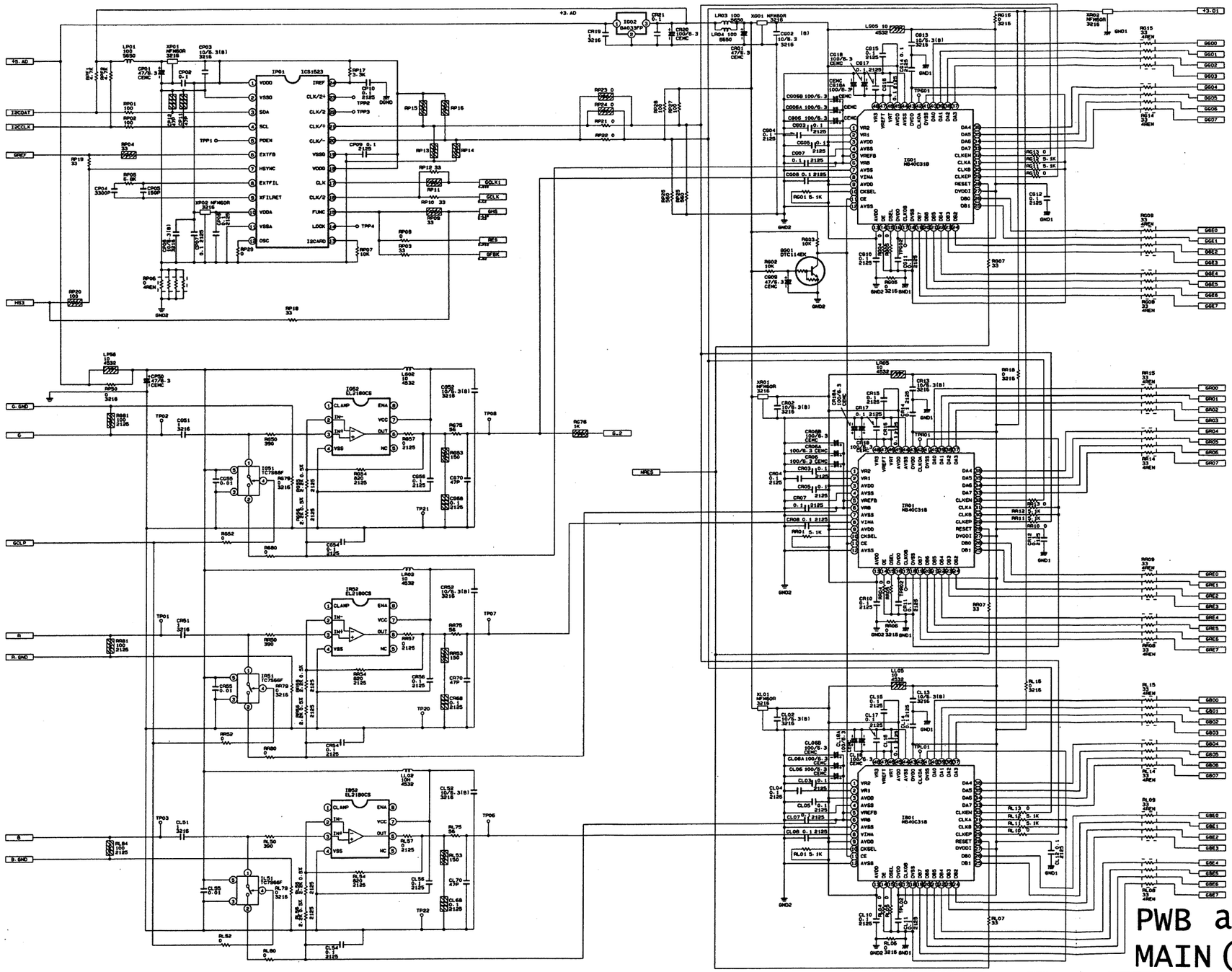
PWB ass'y DRIVE (2/4)

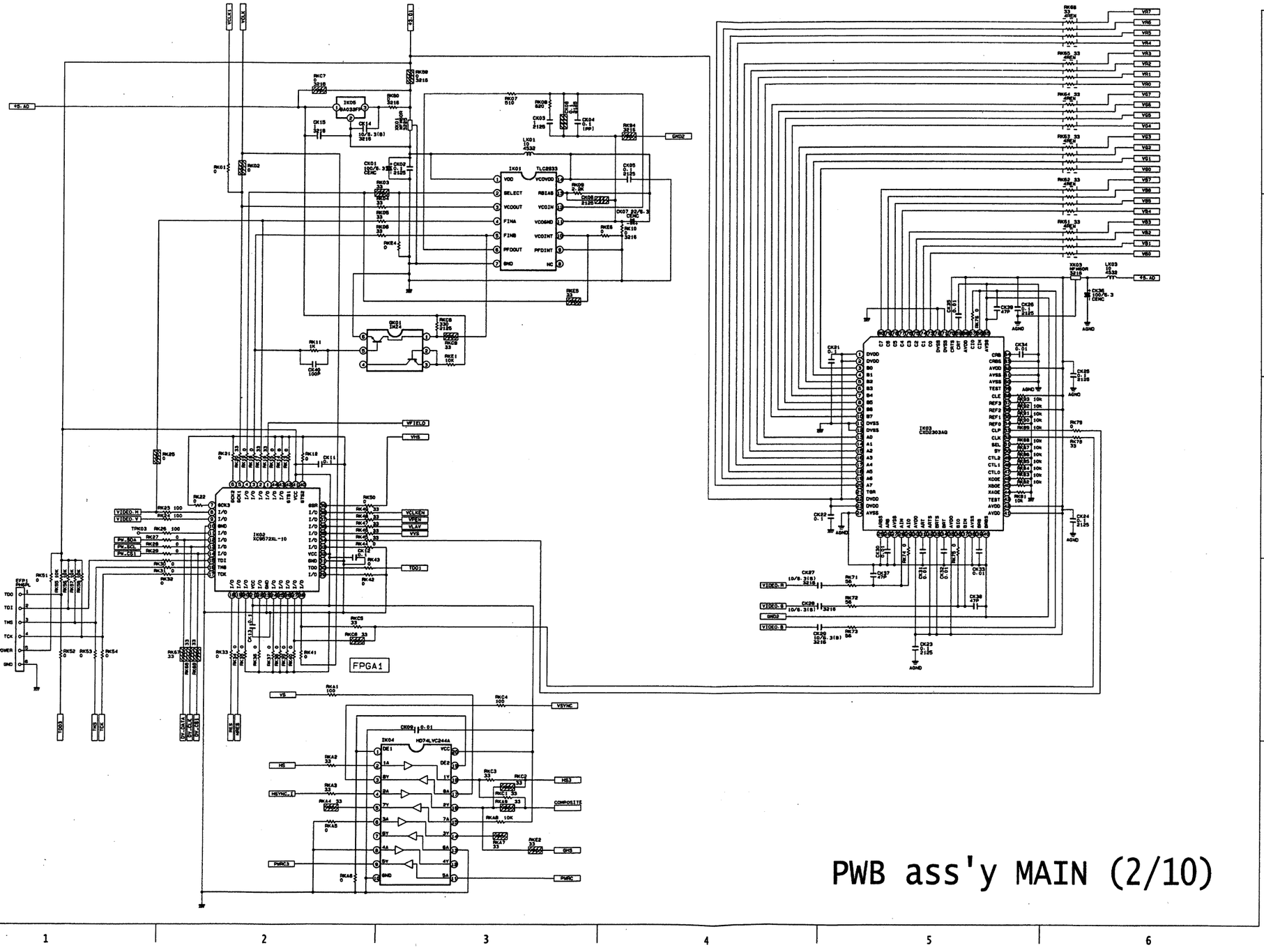
CAD/Room5/sws.P3S-DRIVE/DRIVE#01.002

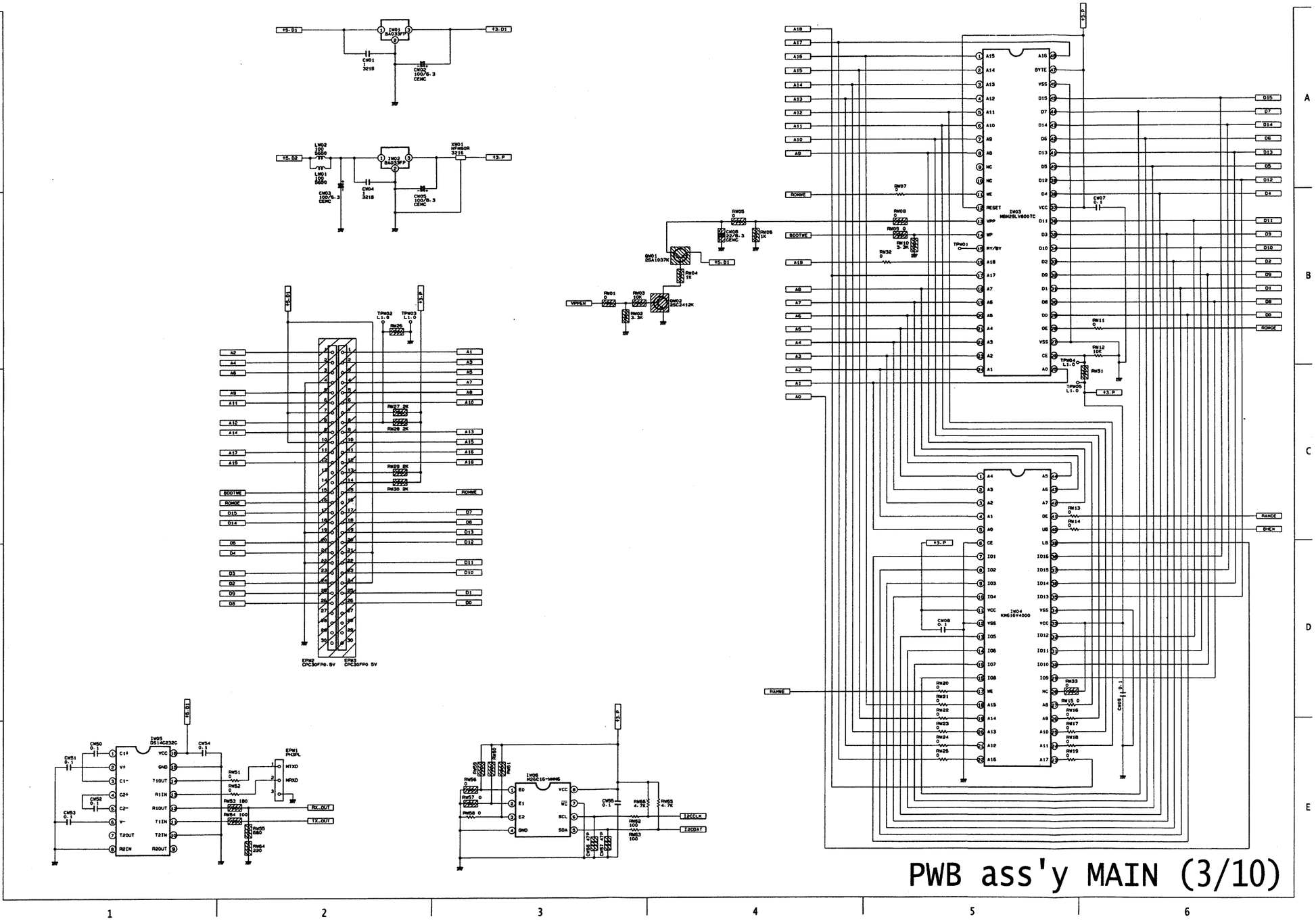


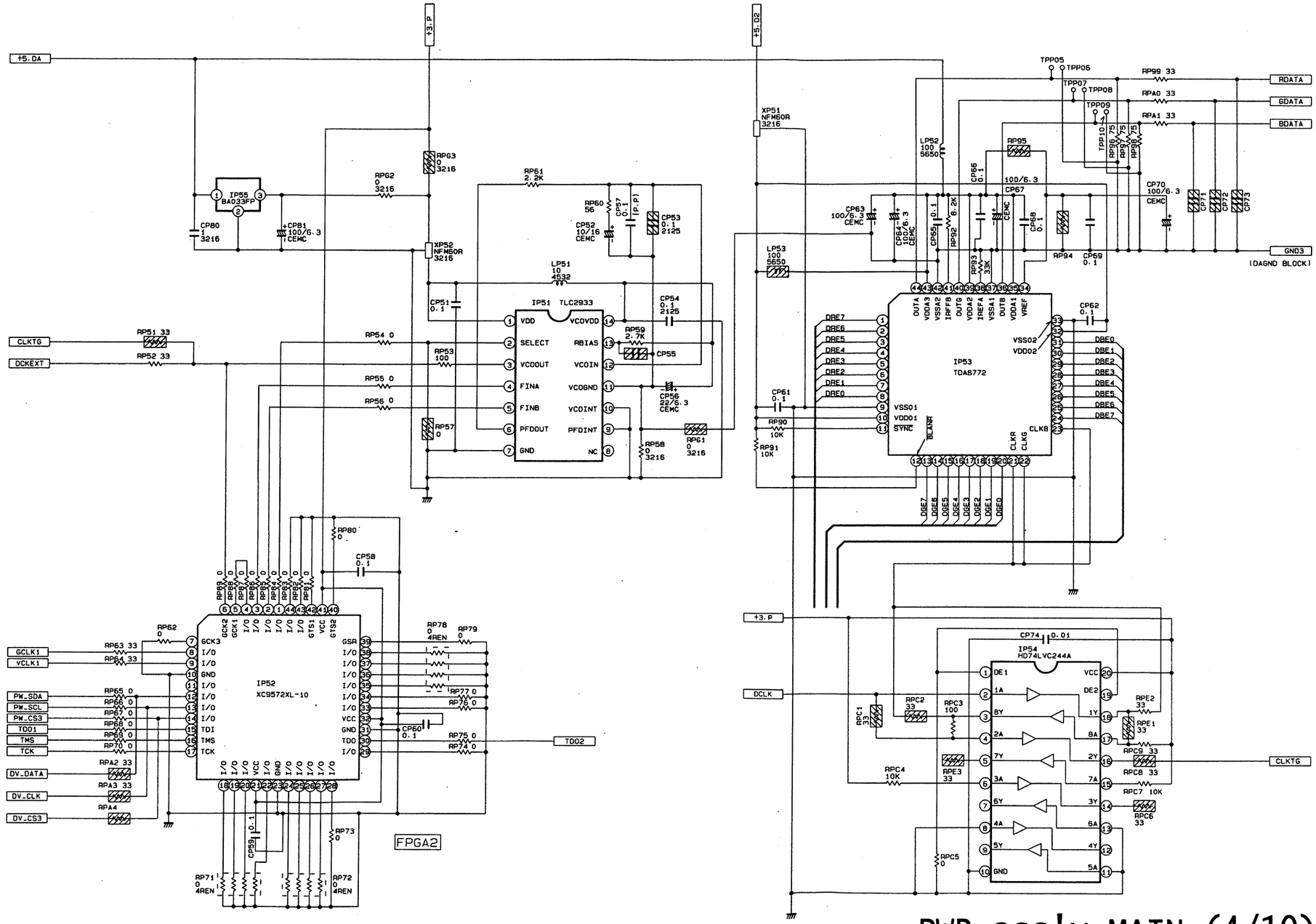
PWB ass'y DRIVE (3/4)


PWB ass'y DRIVE (4/4)
CAD/Room5/sws.P3S-DRIVE/DRIVE#01.004
I601 PQ20VZ11 +15.5V
I603 BA05SFP +5V
I602 BA033FP +3.3V
I607 74LV04A
I605 SN74LV74A
I606 MC74ACT244ML1
EDM1 CPC80PUORBV
VCC1
VCC2
VCC3
SDA1
SCL1
OSC1
DHS
VHS
CS2
DATA2
CLK2
CLKSHT
SCL0
SDA0
BDATA
GDATA
RDATA
RCOLOR
GCOLOR
BCOLOR

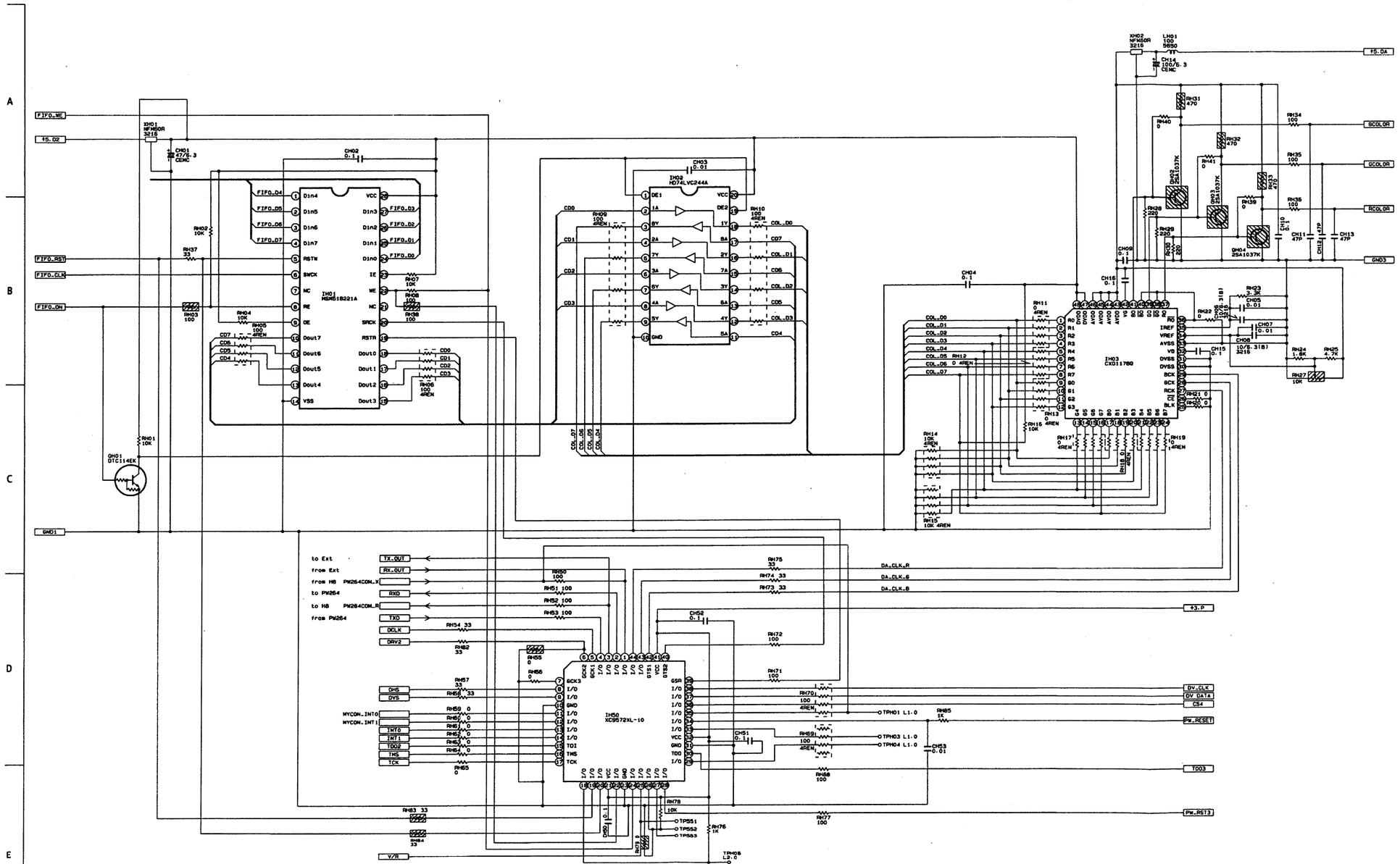

PWB ass'y
MAIN (1/10)

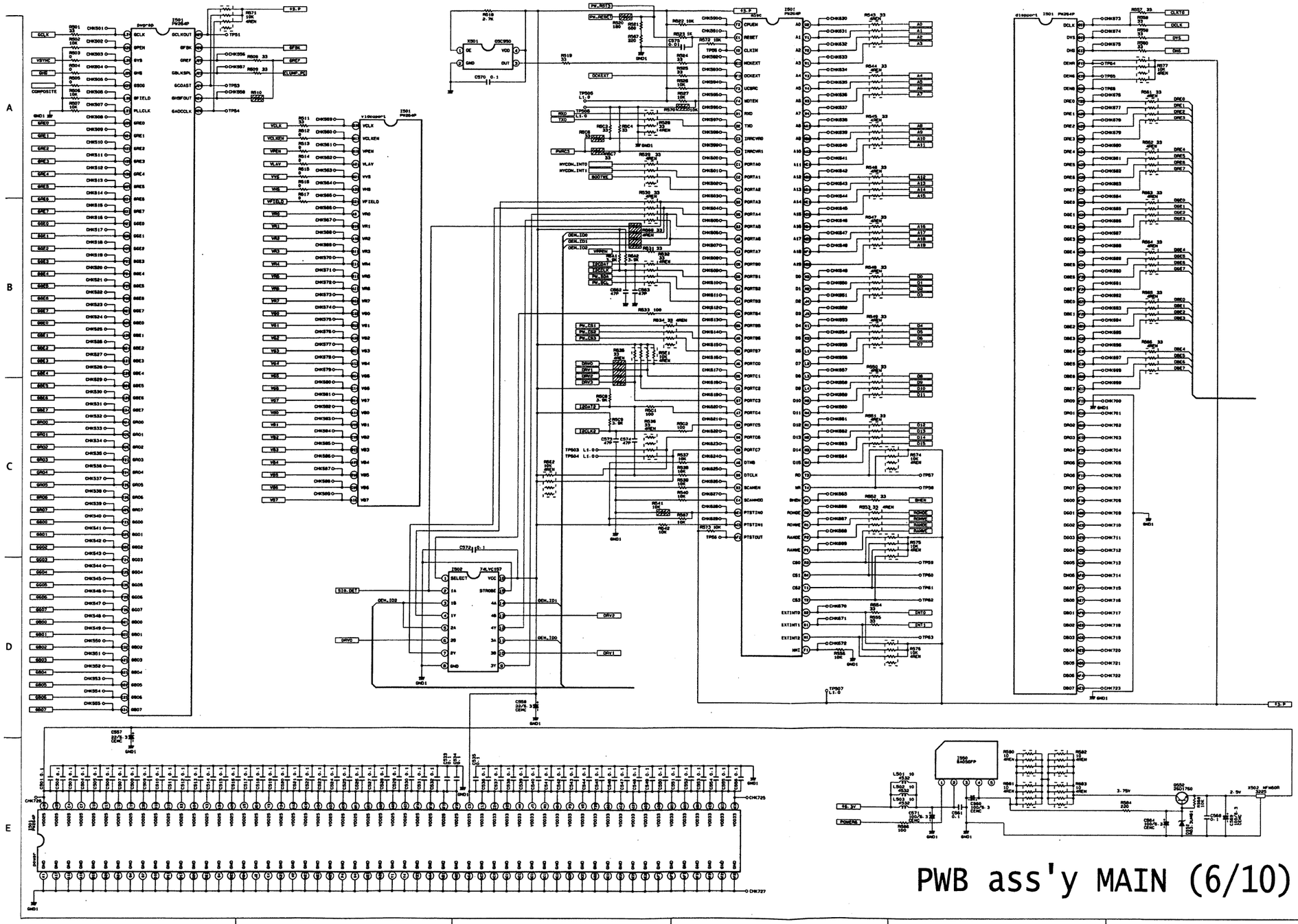

FPGA1
PWB ass'y MAIN (2/10)


IW01 BA033FP
IW02 BA033FP
IW03 M5M29LV800TC
IW04 KM616V4000
IW05 DS14C232C
IW06 M38C16-MMHS
CW01 1 3216
CW02 100/6.3 CEMC
CW03 100/6.3 CEMC
CW04 1 3216
CW05 100/6.3 CEMC
CW06 0.1
CW07 0.1
CW08 0.1
CW09 0.1
CW50 0.1
CW51 0.1
CW52 0.1
CW53 0.1
CW54 0.1
LW01 120 5000
LW02 120 5000
XW01 MPW60R 3216
QW01 2SA1037K
RW01 0
RW02 3.3K
RW03 10K
RW04 1K
RW05 0
RW06 1K
RW07 0
RW08 0
RW09 0
RW10 3.3K
RW11 0
RW12 10K
RW13 0
RW14 0
RW15 0
RW16 0
RW17 0
RW18 0
RW19 0
RW20 0
RW21 0
RW22 0
RW23 0
RW24 0
RW25 0
RW26 2K
RW27 2K
RW28 2K
RW29 2K
RW30 2K
RW31 0
RW32 0
RW33 0
RW34 0
RW35 0
RW36 0
RW37 0
RW38 0
RW39 0
RW40 0
RW41 0
RW42 0
RW43 180
RW44 100
RW45 680
RW46 220
RW47 4.7K
RW48 4.7K
RW49 100
RW50 100
TPW01 0
TPW02 L1.0
TPW03 L1.0
TPW04 L1.0
TPW05 L1.0
EPW01 PWSPL
EPW02 CPC50FP0.5V
EPW03 CPC50FP0.5V
+5.P
+3.P
+5.D1
+5.D2
+3.D1
+3.P
VPPEN
BOOTWE
ROMWE
RAMWE
ROMOE
RAMOE
BHEN
RX_OUT
TX_OUT
I2CCLK
I2CDAT
PWB ass'y MAIN (3/10)



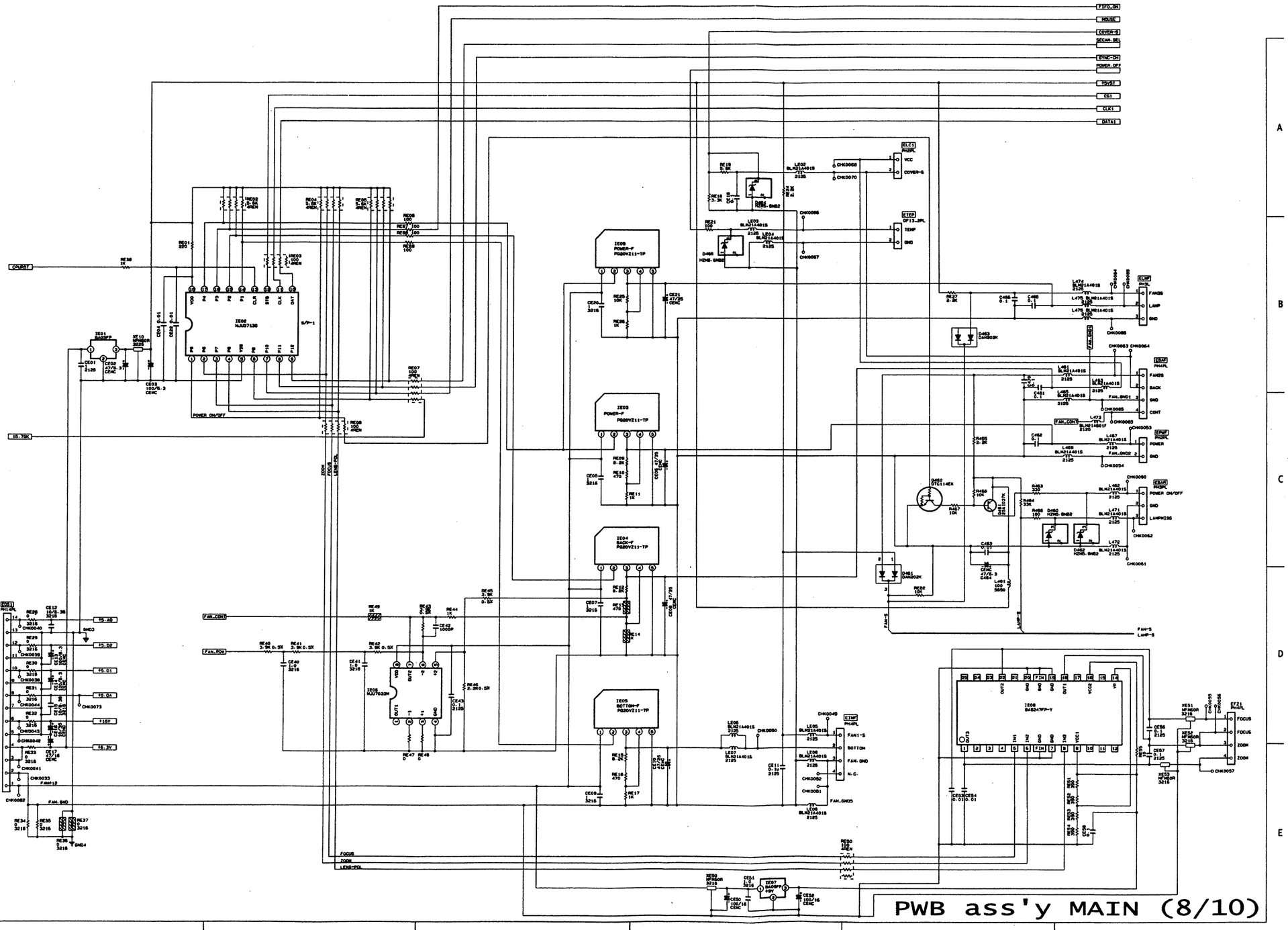
PWB ass'y MAIN (4/10)


PWB ass'y MAIN (5/10)



PWB ass'y MAIN (6/10)

PWB ass'y MAIN (7/10)


PWB ass'y MAIN (8/10)
COURST
15.75K
POWER ON/OFF
FAN_CONT
FAN_POW
FOCUS
ZOOM
LENS-POS
FIFO_ON
HOUSE
COVER-S
SECAM_SEL
SYNC-CH
POWER_SFY
RSVST
CS1
CLK1
DATA1
FAN-S
LAMP-S
FAN_GND
IC08 NJU7138
IC09 POWER-F PQ80V211-TP
IC03 POWER-F PQ80V211-TP
IC04 BACK-F PQ20V13-TP
IC05 BOTTOM-F PQ20V211-TP
IC06 NJU7023M
IC07 BA5847FP-Y
IC08 BA5847FP-Y
D453 DAN202K
D461 DAN202K
D463 DTC114EK
D464 2SB1132K
D465 HZ6B2 SMD
D466 HZ6B2 SMD
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D468 HZ6B2 SMD
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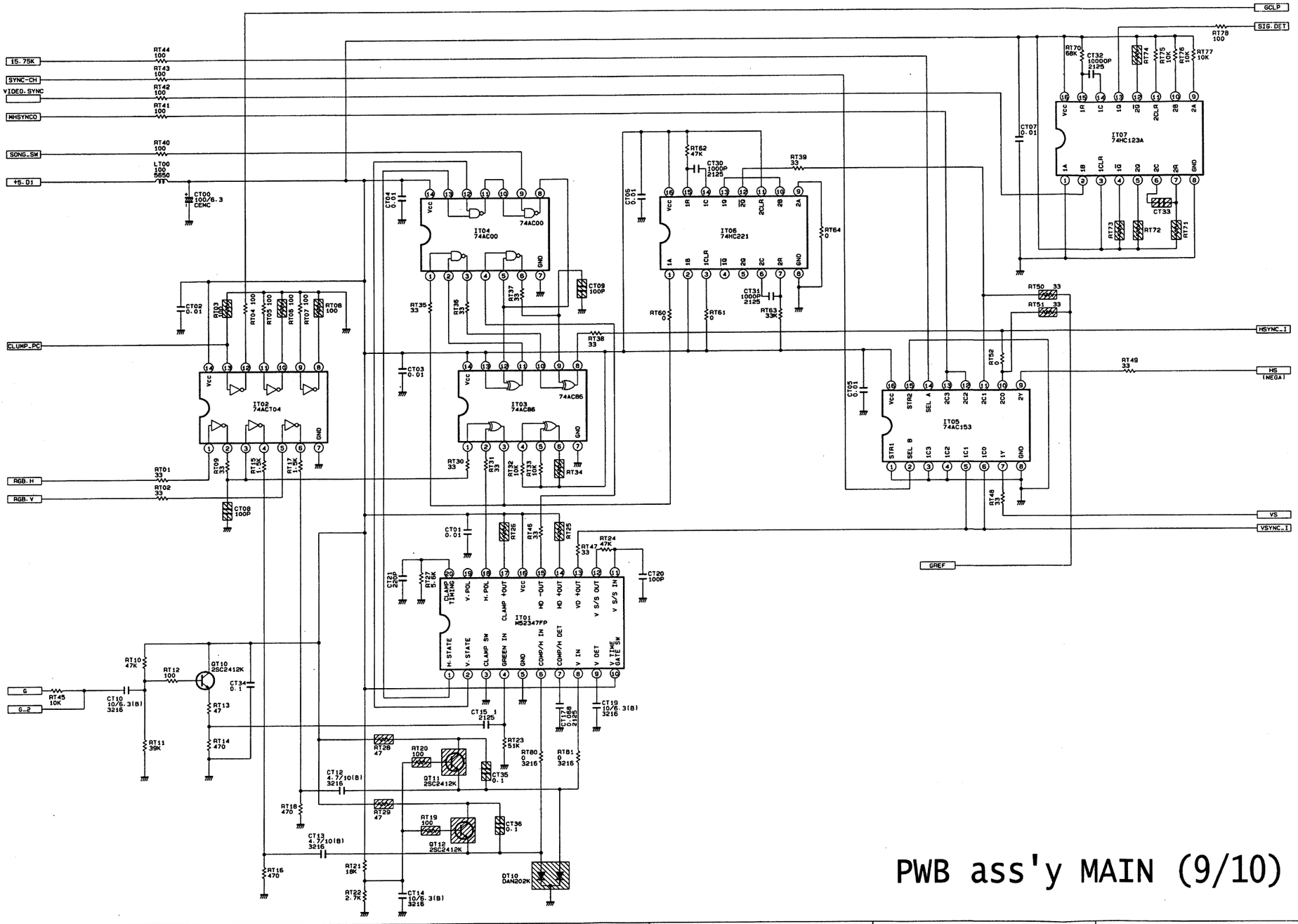
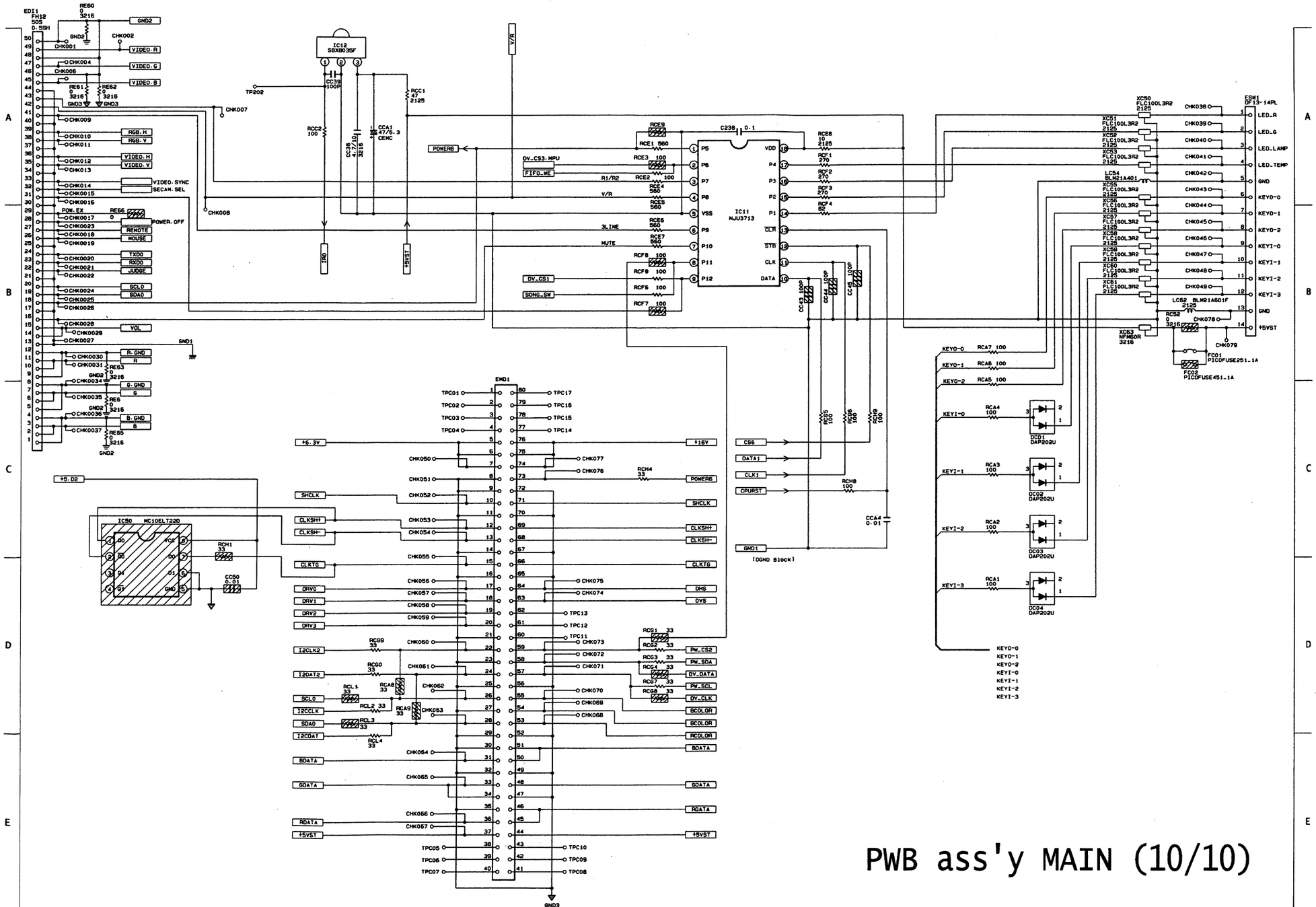
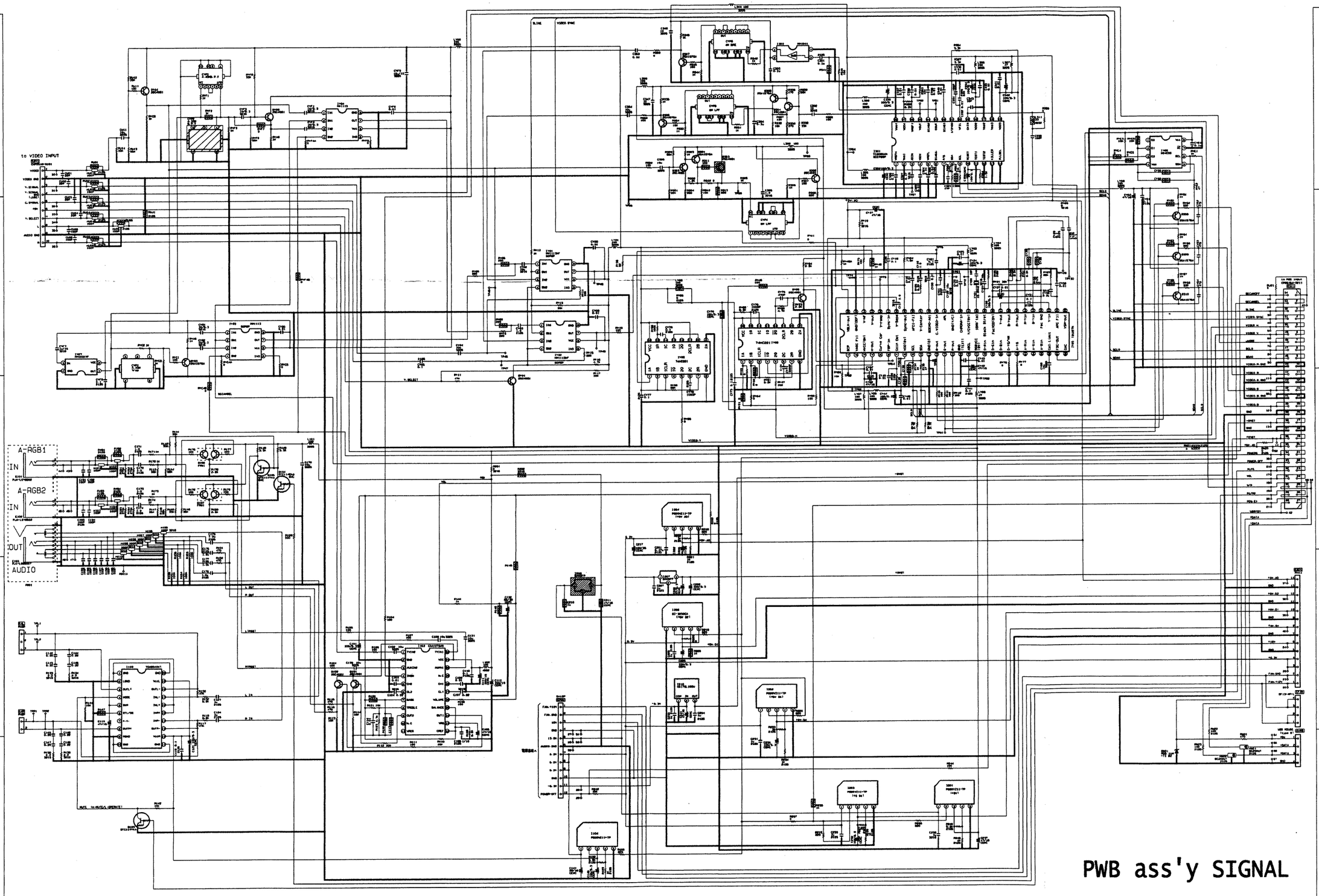
D950 HZ6B2 SMD
D951 HZ6B2 SMD
D952 HZ6B2 SMD
D953 HZ6B2 SMD
D954 HZ6B2 SMD
D955 HZ6B2 SMD
D956 HZ6B2 SMD
D957 HZ6B2 SMD
D958 HZ6B2 SMD
D959 HZ6B2 SMD
D960 HZ6B2 SMD
D961 HZ6B2 SMD
D962 HZ6B2 SMD
D963 HZ6B2 SMD
D964 HZ6B2 SMD
D965 HZ6B2 SMD
D966 HZ6B2 SMD
D967 HZ6B2 SMD
D968 HZ6B2 SMD
D969 HZ6B2 SMD
D970 HZ6B2 SMD
D971 HZ6B2 SMD
D972 HZ6B2 SMD
D973 HZ6B2 SMD
D974 HZ6B2 SMD
D975 HZ6B2 SMD
D976 HZ6B2 SMD
D977 HZ6B2 SMD
D978 HZ6B2 SMD
D979 HZ6B2 SMD
D980 HZ6B2 SMD
D981 HZ6B2 SMD
D982 HZ6B2 SMD
D983 HZ6B2 SMD
D984 HZ6B2 SMD
D985 HZ6B2 SMD
D986 HZ6B2 SMD
D987 HZ6B2 SMD
D988 HZ6B2 SMD
D989 HZ6B2 SMD
D990 HZ6B2 SMD
D991 HZ6B2 SMD
D992 HZ6B2 SMD
D993 HZ6B2 SMD
D994 HZ6B2 SMD
D995 HZ6B2 SMD
D996 HZ6B2 SMD
D997 HZ6B2 SMD
D998 HZ6B2 SMD
D999 HZ6B2 SMD
D1000 HZ6B2 SMD

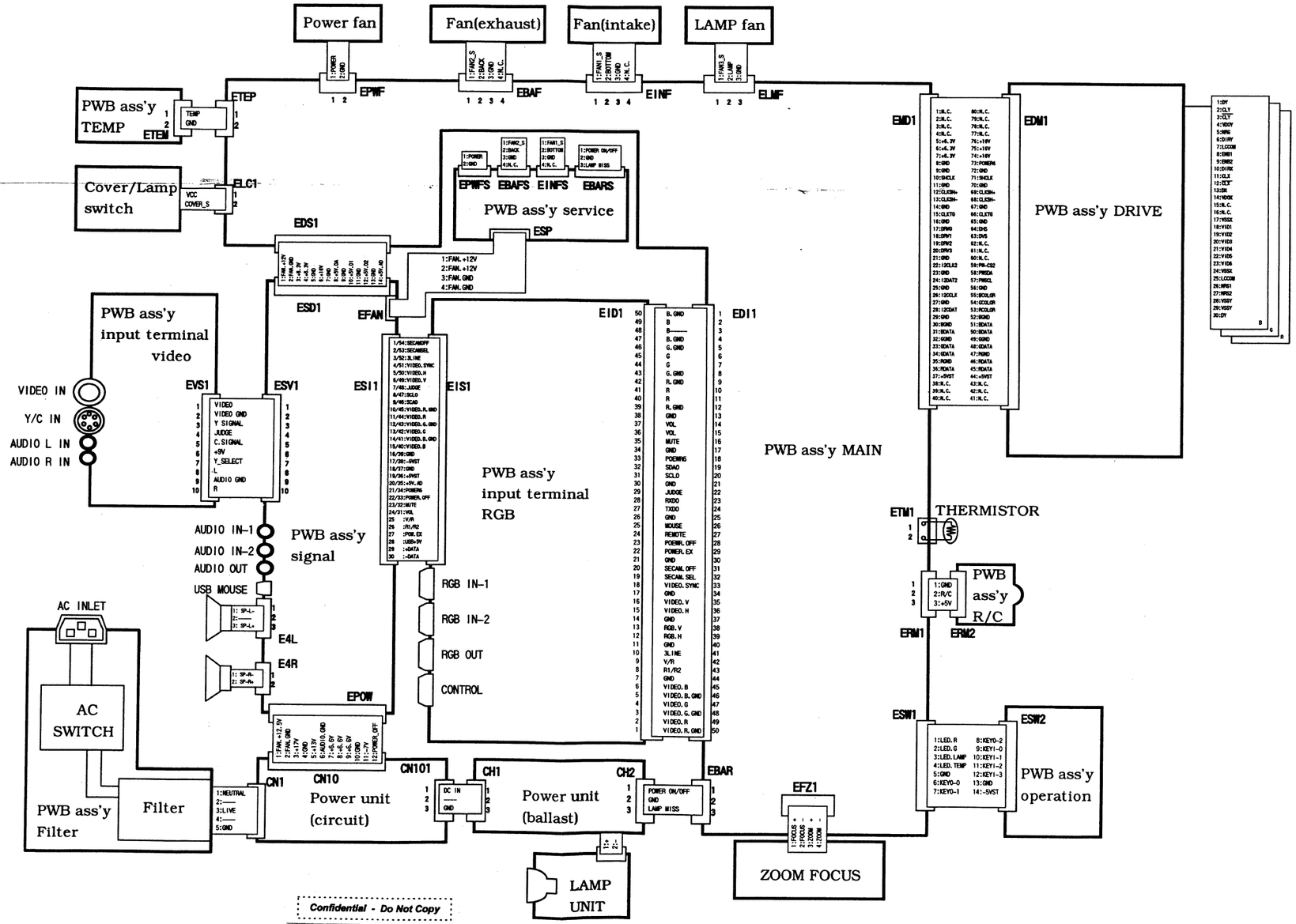

PWB ass'y MAIN (9/10)
15.75K
SYNC-CH
VIDEO.SYNC
MHSYNCO
SONG.SW
+5.0I
CLAMP_PC
RGB.H
RGB.V
G
G_2
GCLP
SIG.DET
HSYNC.I
HS (NEGA)
VS
VSYNC.I
GREF
IT01 M52347FP
IT02 74ACT04
IT03 74AC86
IT04 74AC00
IT05 74AC153
IT06 74HC221
IT07 74HC123A
QT10 2SC2412K
QT11 2SC2412K
QT12 2SC2412K
DT10 DAN202K



PWB ass'y MAIN (10/10)

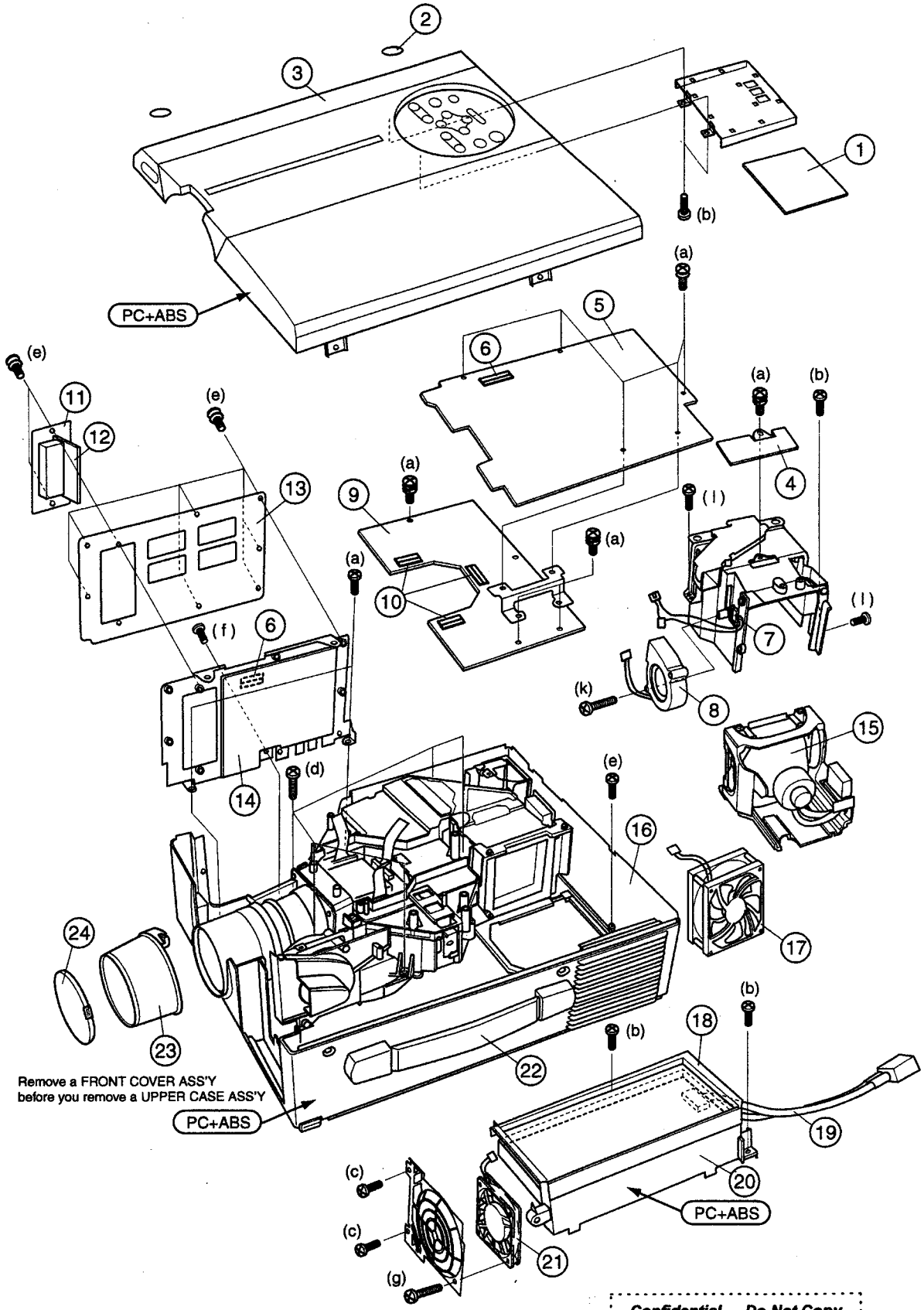

A-RGB1
IN
A-RGB2
IN
OUT
AUDIO
to VIDEO INPUT
PWB ass'y SIGNAL

10. Connector connection diagram



Confidential - Do Not Copy

11. Disassembly diagram



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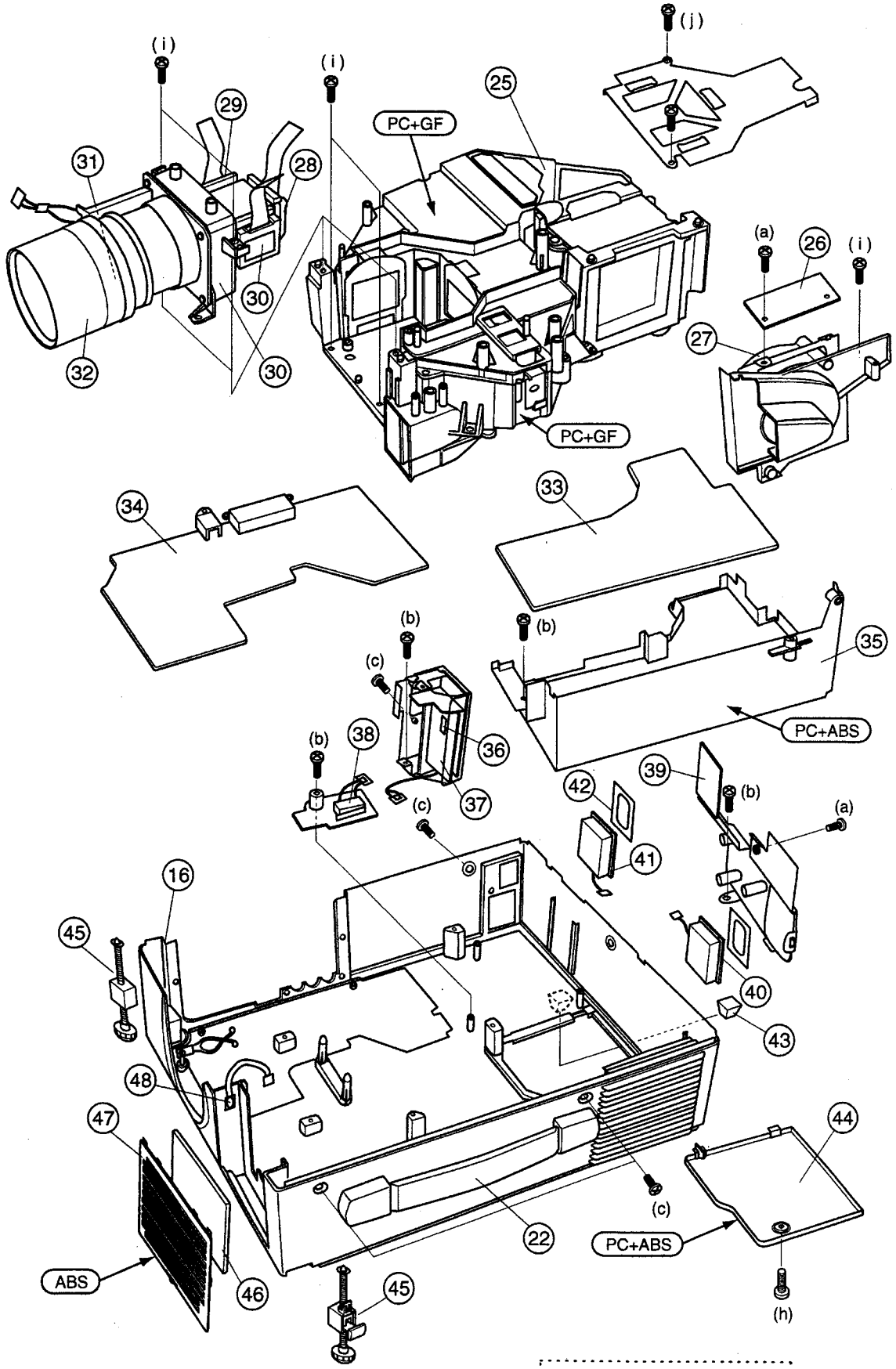
(i)
(i)
(j)
29
25
PC+GF
31
28
(a)
26
(i)
30
27
32
30
PC+GF
34
33
(b)
(b)
35
(c)
PC+ABS
(b)
38
36
39
42
(b)
(c)
37
(a)
41
16
45
40
43
48
47
44
(c)
22
PC+ABS
ABS
46
45
(h)

12. Replacement Parts list

PRODUCT SAFETY NOTE : Components marked with a ⚠ have special characteristics important to safety. Before replacing any of there components, read carefully, the PRODUCT SAFETY NOTICE of this Service Manual. Don't degrade the safety of the receiver through improper servicing.

SYMBOL NO.	PARTS NO.	DESCRIPTION	SYMBOL NO.	PARTS NO.	DESCRIPTION
1	JP03565	PWB ASS'Y OPERATION	34	JP03562	PWB ASS'Y SIGNAL
2	MU00841	FOOT P3	35	NJ03661	PWB HOLDER
3	QD08177	UPPER CASE ASS'Y	36	2722448	FUSE
4	JP03566	PWB ASS'Y TEMPERATURE	37	BZ03411	LINE FILTER
5	JP03593B	PWB ASS'Y MAIN	38	FH00182	LIMIT SWITCH(LAMP DOOR)
6	EA00282R	CPC50 CONNECTOR	39	JP03594	PWB ASS'Y R/C.
7	FH00181	LIMIT SWITCH(LAMP)	40	GK00564	SPEAKER (L)
8	GS00422	DC FAN(LAMP)	41	GK00565	SPEAKER (R)
9	JP03592	PWB ASS'Y DRIVE	42	MU01021	SP SHEET P3
10	EA00564R	CPC30 CONNECTOR	43	PE00111	RUBBER FOOT
11	MD05552	VIDEO PANEL	44	QD07992	LAMP COVER ASS'Y
12	JP03563	PWB ASS'Y VIDEO	45	QJ00621	ADJUST FOOT
13	MD05402	I/O DECO PANEL	46	MU00831	AIR FILTER
14	JP03564A	PWB ASS'Y RGB	47	QD07972	FILTER COVER ASS'Y
15	DT00231	P3S LAMP UNIT ASS'Y	48	AZ00251	THERMISTER
16	QD07748	BOTTOM CASE ASS'Y			(only CP-S860W)
17	GS00362	DC FAN(EXHAUST)		EV00631	POWER SUPPLY CORD(UL/CSA TYPE)
18	MN02212	BALAST COVER		EV00641	POWER SUPPLY CORD(CONTINENTAL TYPE)
19	HA00621	POWER UNIT(BALLAST)		EV00341	POWER SUPPLY CORD(UK TYPE)
20	NJ03651	BALAST HOLDER		EW06031	3 CONDUCTOR VIDEO/AUDIO CABLE
21	GS00232	DC FAN(POWER)		EW05015	RGB-D CABLE(15PIN MALE TO 15PIN MALE)
22	PV00241	HANDLE		EY00362	APPLE MAC ADAPTER
23	QD08291	FRONT COVER ASS'Y		HL01241	REMOTE CONTROL UNIT
24	QD08012	LENS CAP		EW02753	PS/2-2 MOUSE CABLE W/CORE
25	UE06031	DICHROIC OPTICS UNIT		EW02743	ADB-2 MOUSE CABLE W/CORE
26	JP03597	PWB ASS'Y FAN		EW02733	SERIAL-2 MOUSE CABLE W/CORE
27	GS00371	DC FAN(INTAKE)		NX05741	CLEANING TOOL FOR DUST
28	-	LCD MODULE ASS'Y G W/LNS PRISM(REPAIR)		UX06391	LCD/LENS PRISM ASS'Y
29	-	LCD MODULE ASS'Y R W/LNS PRISM(REPAIR)			
30	-	LCD MODULE ASS'Y B W/LNS PRISM(REPAIR)			
31	GP00251	DC MOTOR ASS'Y			
32	-	LENS P3 ASS'Y(REPAIR)			
33	HA00611	POWER UNIT(CIRCUIT)			

The kind of the screw

(a) M3X8 with washer
(b) 3X12 tapping screw
(c) 4X8 DT screw (black)
(d) 3X16 tapping screw
(e) M3X10 with lock-washer
(f) 3X8 DT screw(black)
(g) 3X25 tapping screw
(h) 4X10 black
(i) 3X8 tapping screw
(j) 2.6X5 tapping screw
(k) 3X25 tapping screw
(l) 3X10 tapping screw